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ORIGINAL ARTICLES.

TUBERCULOSIS OF THE SPINAL CORD, WITH REPORTS OF CASES OF TUBERCULOUS MYELITIS AND OF TUBERCULOUS PACHYMENINGITIS.

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AND

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TUBERCULOSIS of the spinal cord occurs in five different ways; (1) as part of a general disseminated tuberculosis; (2) as part of tuberculous cerebrospinal meningitis; (3) as tuberculous tumor; (4) as a tuberculous softening or myelitis; (5) as extradural tuberculosis or tuberculous pachymeningitis with necrosis and edema of the spinal cord.

1. A few miliary tubercles are usually found on the spinal pia in general disseminated tuberculosis, but they have no clinical importance.

2. The same statement applies, as a rule, to the involvement of the cord in ordinary cerebral tuberculous meningitis.

3. Tuberculous tumors stand second in frequency among spinal tumors, but since such tumors are themselves very rare, tubercle of the cord is also a relatively unfamiliar phenomenon.

4. *Tuberculous myelitis* is not yet recognized as a separate pathological process by neuropathologists. At least it is not described by Flatau and Jacobs in their recent six-volume treatise on neuropathology; nor referred to by writers on general pathology. I shall hardly pretend that I am furnishing convincing proof of its existence. Yet the following cases are certainly suggestive of it. I know also that some years ago when tuberculous and chronic organic nervous cases were placed indiscriminately together in the Montefiore Home Dr. B. Sachs and myself several times noted the sudden onset of acute myelitic softening in some of these nervous cases and we independently came to the conclusion that it was due to a tuberculous infection.

Tuberculous meningomyelitis is recognized, but here it is only an extension of the process in the ordinary cases of extradural tuberculosis. In my case it seems that there was a direct infection and infiltration of the cord alone.

Case of Tuberculous Myelitis and Softening of the Spinal Cord.—The patient was a man, aged forty years, who was admitted to Bellevue Hospital, suffering from a progressive amyotrophic lateral sclerosis. This began with symptoms of paralysis and spasm in the tongue, extending thence to the arms, and from there down to the hands. The disease had lasted about six months when the patient developed suddenly a fever, and in a few days a complete paraplegia with some involvement of the arms. He died in the course of a week after these acute symptoms.

Post mortem, the spinal cord was found to be softened from the level of the first dorsal cord to the third cervical segment. There was no apparent tuberculosis found elsewhere, but I cannot say that the examination was very complete. The meninges and vertebræ were normal. The softening was so extensive in the mid-cervical portion that the cord could not be preserved. Beginning at the level of the lower portion of the lesion, that is, the first dorsal segment, there was seen upon transverse section a round white area in the posterior column of the cord. Sections made successively through the dorsal cord showed that this white pultaceous area extended down to about the middle of the fourth dorsal segment of the cord, growing smaller as it extended down. In the first two or three segments of the spinal cord, there was also a superficial softening of the anterior part of the lateral columns of the cord upon the right side. There was absolutely no sign of hemorrhage in the cord when it was examined in its fresh state. Even at the lower point of the white and softened substance, there was no redness or sign of extravasation. The cord was hardened in Müller's fluid, except a small portion which included some of the softened area. It was placed in alcohol, and was examined for me by Dr. H. T. Brooks, of the Post-Graduate laboratory. He found tubercle bacilli in it, and there could be no doubt but that the acute necrotic process which had attacked the cord, was one of tuberculous infiltration and softening. An examination of the spinal cord later, under the microscope, showed also that the necrotic process was not accompanied with any hemorrhagic process, and that there was a little inflammatory reaction. Examination of the affected area showed disintegrated nervous tissue. This case was, therefore, one of progressive amyotrophic lateral sclerosis in the first place. Superimposed upon this was an acute tuberculous infection and also softening of the previously diseased spinal cord. One form of the extension of this softening took the shape of a perforating necrosis, which extended down through the posterior column. A less marked development of this was a superficial necrosis which affected part of the anterior and lateral columns.

This case suggests, to my mind, that the perforating necroses which accompany some severe cases of myelitis or cord degeneration, are really tuberculous phenomena, and not primarily hemorrhagic, although, in some instances, there may be a hemorrhagic process associated with it.*

* The clinical features have been described in detail by Dr. Jos. Collins, American Journal of the Medical Sciences, June, 1896.

5. *Tuberculous pachymeningitis* from caries of the vertebræ, with so-called compression myelitis, is the affection most commonly met with and of most practical importance. When the process extends from the bone to the extradural space, this becomes filled with a tuberculous, caseous, and sometimes purulent, mass, which surrounds the cord; the cord then becomes secondarily affected, and its functions interfered with; and we have the symptoms of "compression myelitis." There is not always, perhaps never, a true mechanical compression of the cord through the bending of the spinal column. The compressing mass, however, interferes with the vascular and lymphatic circulation. As a result, there is sometimes an ischemia and sometimes an edema, or both, with the result that the cord may undergo degeneration and necrotic softening. If the process continues, the parts are destroyed, absorbed in part, and a sclerotic mass is left. The dura, however, usually protects the cord from tuberculous infection and from suppuration, so that the cord process is not usually an inflammation. It is rather a tuberculous pachymeningitis with edema and more or less necrosis of the cord. If the tuberculosis can be arrested by fixing the spine or by surgical measures, the cord repairs itself; and as a result, in even very severe paraplegia from extradural tuberculosis, recovery may occur.

In most cases the compression disturbance seems to affect mostly the motor tracts leading to a spastic paraplegia with some pain, but no marked anesthesia. This is because, as shown in the following case, the lateral columns are especially sensitive to disturbance of nutrition, as is the case with syphilitic meningomyelitis.

In the following case, the necrosis edema, however, affected not only the lateral but the posterior column and central gray matter, leading to dissociation of sensation, such as is seen in syringomyelia and central hemorrhage of the cord.

The peculiar group of sensory symptoms, and the absence of kyphosis, make the case of rather unusual clinical type. The pathological findings show very clearly that the process in the cord lesion was a secondary one, due to the adjacent tuberculosis but not a part of it. The cord was not pressed out of shape, it had not reached a stage of softening, nor did it show any true inflammation change.

The term "compression myelitis" is a convenient one, but it does not indicate the true nature of the change, which should be called a pressure necrosis.

Summary.—Caries of fifth cervical vertebra complicating pulmonary and glandular tuberculosis; external tuberculous pachymeningitis; quadruplegia; dissociated anesthesia. Autopsy. Histological examination: Some necrosis edema; Gower's tracts traced to their decussation in the anterior medullary velum.

J. J., aged twenty-four years; married; negro; laborer; was admitted to the Second Medical Division of Bellevue Hospital, June 4, 1901. No family history bearing on the case could be obtained. Three years before had venereal ulcer of uncertain nature; no secondaries; no internal treatment. In 1899 contracted pneumonia, since then has had cough. On March 15 an exposure to cold was followed by severe pains in the arms, shoulders and back of neck. These pains continued and were very sharp. One month before admission a tumor had appeared in the left axilla.

Physical Examination on Admission.—Well nourished, muscular, slight general adenopathy. Rounded mass in left axilla, firm and painless. At the right apex anteriorly and posteriorly dulness on percussion with bronchial breathing and few moist râles. Temperature 103° F., pulse 84, respirations 20. Otherwise examination negative. Urine normal. Examination of sputum on June 14 and 15 for tubercle bacilli was negative. Leucocytes, 12,800.

June 27. The sharp, shooting pains in the neck and shoulders have continued with diminishing intensity. For several days he has complained of paresthesia in all four extremities with weakness. To-day on waking he found that he could not move his legs or arms. Since admission the temperature has ranged between 101° and 103° F. or 104° F., with a daily remission of from one to two degrees. Pulse and respiration in proportion.

June 29. The head is held slightly forward and fixed in one position. Movements of head such as flexion and rotation are carried out slowly and with difficulty. Lateral flexion is especially restricted and causes pain. A slight blow on the vertex induces severe pain referred to the lower cervical region. The lower cervical spines beginning with the fifth, are quite tender on percussion and also on deep pressure on either side of the spinous processes. This sensitiveness is particularly marked at the fifth cervical vertebra. The shock transmitted from a blow on the feet is felt acutely in the cervical region. No abnormalities in contour. Palpation of the pharynx negative. There is complete paraplegia with the exception of very slight movement of the foot and leg on the right side. The abdomen is distended, the muscles relaxed and powerless. The respirations are purely diaphragmatic. In the arms, movements of the shoulder-joint occur normally, but extension of the elbow-joint is quite lost on the right side and diminished on the left, while flexion is very weak, especially on the right. Extension and flexion of the wrist are so weak as to be scarcely perceptible and there is not a vestige of movement in the fingers. He has perfect control of bladder and rectum. Sexual power is undisturbed. The cranial nerves are normal. The arm-jerks are lost while the knee-jerks are very feeble, occurring only at every fourth or fifth trial. The Achilles-jerks are present on both sides; no ankle clonus; Babinski phenomenon on both sides. The upper and lower extremities are quite flaccid. The tactile and deep sensibility are well-preserved through-

out. There are analgesia and disturbance of the temperature sense extending as high as the second rib anteriorly and the midscapular region posteriorly. The abdominal and cremasteric reflexes are present.

July 6. The enlarged gland was removed from the left axilla and was pronounced, by Dr. Ewing, to be tuberculous.

July 23. Electrical. Strong Faradic currents applied to the paralyzed muscle groups of the arms produce no response, or only a very feeble, slow contraction. The muscles of the leg likewise do not respond to strong Faradic currents with the exception of the right adductor group. The muscles of the neck and face respond promptly. Very slight tactile disturbance (hyperesthesia) over the feet and legs. Pain and temperature senses are as noted above. The deep sensibility, except for slight uncertainty in the toes, is good. The knee-jerks are quite exaggerated; ankle clonus present on both sides; moderate spasticity. Still controls bladder and rectum. Sexual power retained.

Blood examination by Dr. Hastings. Red cells. 4,320,000; white cells, 11,800; hemoglobin, 85 per cent. Differential count. Polynuclear, 83⅓ per cent.; eosinophiles 1 per cent.; large mononuclears 7 per cent.; small mononuclears 8⅔ per cent.

September 19. Considerable edema of the lower extremities and face. Deep decubitus over sacrum. Breaking down of axillary tumor with formation of deep sinuses. The paralysis of motion and sensation and the reflexes remain as at

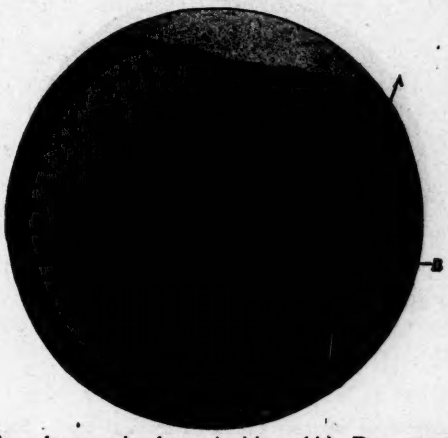
Fig. 1.

Section of fifth cervical segment at point of greatest extradural tuberculosis.

last examination. The sphincters of the bladder and rectum were continent up to the last. Died on September 25, 1901.

Autopsy was performed forty-eight hours after death by Dr. Otto Schultze. Large bedsores on the sacrum, both trochanters and the left scapula. The incision of the soft parts to remove the cord allows the escape of a considerable quantity of cheesy pus corresponding to the fifth, sixth and seventh cervical vertebræ. The muscles are infiltrated and necrotic. Deep sinus in the left axilla undermining and invading the pectorals. On removing the arches of the cervical column a large, cheesy mass was uncovered corresponding to the fifth and sixth cervical vertebræ and encircling the cord in its posterior aspect (Fig. 1).

Fig. 2.



Tuberculous peripachymeningitis. (A) Dura mater; (B) cellular proliferation outer surface of dura; (C) tuberculous mass.

This mass is entirely extradural. Tuberculous abscess formation in the left side of the neck bathing the trachea and esophagus in pus and laying bare the anterior surface of the cervical spine. The body of the fifth cervical vertebra is crumbled and broken down. Fistulous openings into the esophagus in the right side corresponding to caseating lymph glands. Extensive mediastinal and retroperitoneal glandular tuberculosis, large areas of tuberculous caseation and softening in both lungs; general miliary tuberculosis. Parenchymatous degeneration of the kidneys. Tuberculous ulcers in the small intestine. Sero-fibrinous pericarditis. An area of tuberculous caries on the inner aspect of the right frontal bone 3 cm. in diameter. Underlying this is an external tuberculous pachymeningitis. The brain, inner surface of dura and meninges are normal.

Histological Examination.—Transverse section at the site of compression, including the cord and peripachymeningitic exudate proved this to be entirely extradural. It consists largely of homogeneous areas of necrosis at the borders of which are dense accumulations of round cells including epithelioid and giant cells (Fig. 2). The blood vessels between the layers of the dura are thickened and surrounded by round cells. On the internal surface of the dura mater corresponding in extent to the peripachymeningitis, is a proliferation of endothelial cells. The adjacent endothelial cells of the arachnoid also participate. The walls of the anterior and posterior spinal arteries are normal; the lumen patulous.

The anterior roots are free. The posterior roots are the seat of extensive round cell infiltration and proliferation, compressing and obliterating the nerve elements. The gray and white matter of the cord contain numerous vacuoles and clefts, more numerous in the white than in the gray matter (Fig. 3). All the intramedullary

Fig. 3.

Tuberculous necrosis edema of cervical cord. Section shows an area of lateral column, the nerve fibers have almost entirely disappeared.

vessels are thickened and surrounded by round and spindle cells. The large multipolar cells of the anterior horns show marked changes; chromatolysis, peripheral dislocation of the nucleus, swelling of the nucleolus, hyaline degenerations, rounded and broken processes. Some few cells are normal. The anterior horn cells at other levels of the cord are normal. Above and below the site of lesion the usual secondary degenerations—ascending and descending—were followed by the Marchi method.

Remarks.—The interesting features of the case are as follows: The acute onset after exposure to cold; the three months' duration of the lancinating pains without other symptoms referable to the spine or nervous system, which, in view of the histological examination, were caused by infiltration and compression of the posterior roots; the very acute onset of the paralysis; the dissociated anesthesia with complete paralysis of motion which suggested the existence of a central lesion of the cord. The diminution of the knee-jerks at first followed by great exaggeration, spasticity and clonus, was probably caused by the shock of the acute onset.

The spinal cord nerve fibers showed swelling of myelin sheath and absent or swollen axis cylinders. Often the fiber is entirely gone, leaving only a vacuole (Fig. 3).

The dissociation of sensation is not explained by any distinct focus of central softening. The lesion of the cord substance seemed indeed most marked in the lateral columns and in the neighborhood of the posterior roots. This latter disturbance would not explain, however, the sensory disturbance in the lower limbs, and it must be inferred that the necrosis edema, by affecting partially the posterior columns and partly the ascending (Gower's) tract of the lateral columns, was the cause of this peculiar clinical symptom. The very distinct degeneration of Gower's tracts easily followed as far as the level of the corpora quadrigemina would tend to confirm the view that it is along these tracts that pain—temperature sense impulses are carried. No ascending degeneration was to be found in the inferior cerebellar peduncles, and no tracts were seen running in the formatio reticularis.

THE OUTLOOK FOR A MORE SANITARY STREET-CAR SERVICE IN NEW YORK.

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IF it be true that the sentiment of the people is the supreme law, there is reason to take a hopeful view of the street-car situation in New York. The people who have long suffered in the densely crowded, unheated and unventilated cars of Manhattan have protested. Men have taken the time from business to stand on the street corners and count the cars and the people riding in them. It has been found that the crowding at midday, at night and on Sundays is approximately equal, and the reason for this has been discovered to be that the companies withdraw their cars as the number of travelers diminishes. The public has surmised that the refusal of the companies to issue transfers at certain points is animated less by a desire to prevent crowding than to increase the number of fares paid. It has been estimated that to run cars without sufficient heat represents a considerable saving in the electricity. To equip the cars with power brakes, to provide long cars with two conductors and to keep the cars clean and sanitary would mean considerable expense. This might be poor business policy for the companies.

Realizing that the interests of the companies are not entirely coincident with those of the public in the matter of comfort and convenience, when improvements which cost money are considered, the public has taken a deliberate stand for reform. The movement has no reference to the underground rapid transit road which is about to be opened. It is everywhere recognized that the carrying capacity of this line will not bring a sufficient relief to wholly remedy the existing conditions of overcrowding, and it will certainly not affect the policy of the surface roads so far as sanitary questions are concerned.

In a paper published in MEDICAL NEWS, April 19, 1902, I reviewed briefly some reasons for believing that the overcrowding of street cars, which was becoming more aggravated day by day in New York, was attended by grave dangers to health. Theoretical, as well as practical, reasons were given at the time to show that sanitation had been a neglected factor in the study of city

transportation, and that conditions existed in the cars of New York City which probably had something to do with the spread of respiratory diseases.

In the last two years health conditions have grown steadily worse. Crowding has increased and the cars have been less adequately heated and ventilated. The only visible improvement has been a slightly better control of the individual spitter. But even here the results are far from satisfactory. There are over thirty lines of horse cars on Manhattan Island, nearly all of which are in a disgracefully filthy, unheated and unventilated state. The condition of the elevated railroad is deplorable, particularly with respect to the stations. Not only are the waiting rooms, stairways and platforms inadequately cared for, but the plumbing connected with the closets, in many cases, greatly in need of repair.

But the odors and dirt of the stations, unpleasant as they are, are insignificant beside the sand-and-sputum messes on the platforms. Far from observing the sanitary ordinances, the public expectorates upon the floors and the company lays down sand for its accommodation. Later, the sand is scattered by the hurrying passengers and its dangerous elements, ground into dust, are scattered by the winds and draughts of passing trains. The sight of the slimy sand is nauseating to thousands who do not know its danger, while to those who understand what it means it is a matter of grave concern. No physician can doubt that the sputum-saturated sand contains the staphylococci and streptococci of suppuration, the bacilli of tuberculosis, the pneumonococci of Friedländer and other dangerous organisms. With respiratory diseases on the increase and pneumonia assuming practically the form of an epidemic, the suppression of this nuisance is a matter of the utmost public importance.

When such conditions are permitted to exist, it is time indeed that the indignation of right-minded people should be aroused.

The public movement for better street-car accommodations is little more than a year old and was the immediate outcome of conditions of overcrowding which had been rapidly approaching a climax. Credit for bringing the subject to a focus belongs to various associations of women, who publicly protested against the repulsive personal contact and frequent secret insult to which women passengers were subjected in the densely crowded cars. Following this initiative several organizations of professional and business men took the matter in hand, and through representations to the companies and by appeals to the authorities of the city and State, sought to alleviate the intolerable conditions.

Complying with a public demand, the State Railroad Commission held public hearings in New York and undertook an investigation of the conditions and their cause and cure.

The hearings partook somewhat of the nature of a suit, wherein the railroad companies were the defendants, and the public, through representatives of business men's organizations, tax payers' associations and health societies, acted as plaintiffs. To each charge of inadequate service the companies replied that the conditions complained of were indeed bad, but that everything was being done to remedy the situation which human skill and experience justified. The companies had the greatest, and practically the only, experts who were competent to pass judgment upon the alleged shortcomings of the companies, and these experts were working assiduously to improve matters. The whole question should be left in the hands of the companies, whose interest it was to carry as many passengers as possible.

The inquiry was not productive of the relief sought. The report of the railroad commission, where it did not wholly concur with the representations of the railway companies, advised changes which were either impracticable or productive of little benefit. With regard to sanitary reforms, the State Railroad Commission distinctly stated that this subject was outside of their jurisdiction. Improvements in the warming and ventilation of cars and in cleaning them, rested entirely with the New York City Department of Health.

Unable to obtain, by direct appeal to the companies or to the State Railroad Commission, the relief which it was believed could reasonably be afforded, organizations of business men, one of which is known as the Merchants' Association of New York, undertook to secure reforms by carrying the subject to the legislature.

Preliminary to the introduction of a bill at Albany, however, the Merchants' Association undertook to gain a better knowledge of the transportation question as it related to improving the surface and elevated railroad services of Manhattan. A committee was formed, with a subdivision on law and one on engineering and sanitation.

The committee on engineering and sanitation was composed of five members, all of whom had had considerable experience in transportation or sanitary problems.

It was realized by the committee at the outset that the problem faced by the railway companies was one of unprecedented scope. Nowhere else had such a vast number of passengers to be accommodated on lines within so small a territory. From computations made from data supplied by a report of the Board of Railroad Commissioners of the State of New York, it was found that about 1,000,000,000 passengers are carried yearly by the surface and elevated lines of Greater New York, which is about one-fifth of the total street railway transportation of the whole United States. The amount of travel per inhabitant has increased greatly within recent years. It is said that in 1853 each inhabitant of New York city used the public conveyances on an average of 13 times a year, while each inhabitant of Manhattan Island now uses the elevated and surface roads on an average of 415 times a year, or 32 times as often.

In studying the transportation problem of New York, the committee on engineering and sanitation undertook to examine into a series of specific questions, and believing that a solution of the most difficult would make the others comparatively easy, the committee directed its attention principally to Manhattan Island. A corps of trained observers and a staff of office assistants were engaged to collect and collate data on the various points under consideration. Many months were spent by the committee in their investigation in New York city, and visits were made to Philadelphia and Boston to observe transit conditions. The formal report of the committee to the Merchants' Association has recently been printed and issued in book form.

The technical work of this committee has shown: That more cars can be put in operation on the surface lines at all hours of the day and night; that the overcrowding which is customary at other than rush hours is caused by the withdrawal of too many cars from the lines; that it lies within the power of the companies to largely increase the car service on all but the most congested streets; that the carrying capacity of the Broadway line could be increased more than 70 per cent. by the substitution of cars having a seating capacity of fifty-two, instead of the average seating capacity of thirty passengers of the closed cars now used; that to guard against accidents power brakes should be substituted for the hand brakes now employed; that the safety of passengers demands that two employees beside the conductor be placed on all cars having a body length of twenty-eight feet or more; that many of the stations of the elevated road are inadequate and out of repair, and should be provided with wider stairs, covered platforms and arrangements for separating the streams of incoming and outgoing passengers.

Among the principal sanitary conclusions arrived at by the committee, the following may be mentioned:

Among the insanitary conditions prevalent are the sand piles used in lieu of spittoons on the elevated railroads. It is impossible to conceive of a greater menace to the public health than these. The sand which is thrown upon the platforms invites and receives infectious material from the lungs and throats of sick persons to an extent which is as dangerous to health as it is disgusting to sight. The expectorated material becomes dried in the sand and is distributed by winds and by travel of passengers through the cars and stations and through the atmosphere of the street below. The sand pile nuisance is the most insanitary condition which calls for attention in connection with the transportation problem in New York City.

A provision of the Sanitary Code requires that the elevated railroad company should provide cuspidors for use on the elevated platforms. The number is now insufficient, and those which are in use are too small. It is desirable that cuspidors of ample size and decent appearance should be provided. Observation shows that where these conveniences are properly supplied they are generally used by the public.

If the spitting ordinance cannot be construed so as to prevent passengers and elevated train men from expectorating into the streets and onto the tracks, it would be desirable to so modify it that this objectionable practice may be forbidden.

Better care of the stations is needed. At present proper attention is lacking in this respect, and the waiting-rooms, closets and platforms are not uniformly maintained in a cleanly or orderly condition. Dirty pails should not be left standing in the waiting-rooms or passageways; dust and dirt from the platforms and stairs should not be swept into the streets. It should be a rule that no dust is to be raised in cleaning. The methods of cleaning which are suitable for the stations, including platforms and stairways, require the use of mops, soft hand brooms and cloths. Stiff brooms should not be used. Sand should never be used anywhere on the station floors, platforms or stairways, unless to guard against slipperiness.

It is recommended that the cars be cleaned more thoroughly. More attention should be given to systematizing this matter, so as to avoid such objectionable practises as the morning running of cars which have been used all night.

The use of cocoa mats on the floors of cars has frequently been condemned. They serve as collecting and propagating places for bacteria, and it is impossible to clean them. Attempts to disinfect such articles, except in large and expensive sterilizers, are useless.

Other objectionable floor coverings include slats or strips of wood permanently fixed to the floor and which cannot be cleaned without the raising of dust, which is objectionable. The floors of the cars should be covered with a smooth, nonporous material, or a grating of non-absorbent material which may be easily removed for cleaning.

The catch-pans, which are located under the tracks to catch drippings, should be regularly and systematically inspected and kept clean. Under the present circumstances, the catch-pans serve not only to collect drippings, but also as reservoirs of filth.

At present the toilet-rooms of the stations are not always clean. In many cases the plumbing is out of order, the closets overflowing and the waste-pipes stopped. It is unnecessary to point out the objectionable nature of these insanitary conditions.

Proper attention to the ventilation of the stations is needed. Better ventilation may be secured by the careful regulation of transoms, windows and ventilating devices, whereby the air may be continually refreshed and unpleasant odors avoided.

The stations should be warmed in winter to a temperature between 55° and 65° F.

It is desirable that the cars of the elevated railroad should be improved with respect to venti-

lation and warming. An advantageous way for improving the air of the cars without drafts is to provide for the introduction of air at a greater number of points. The ventilation is more satisfactory on the elevated roads than on the surface cars, but it is by no means all that could be desired. More air should be admitted and a part of the air should be carried over the heaters, for the double purpose of warming the fresh air and reducing the intensity and concentration of the heat now given off under the seats. There are various means of accomplishing this end. The experiments of the Pennsylvania Railroad Company and a popular device now being employed on the windows of large office buildings furnish excellent illustrations of the practicability of this method.

The temperature of the cars should be more carefully regulated and placed under the control of the conductor of the train, who is best able to judge of the need of adjusting the warming and ventilating apparatus, and he should be properly instructed and held responsible. Under the present circumstances the cars are allowed to become sometimes too warm and frequently too cold. The temperature should not be permitted to fall below 55° F. nor in cold weather to rise above 65° F.

In order to improve the ventilation of the cars of the surface roads, the same recommendation is made which was offered in connection with the cars of the elevated road. The air should be introduced at a greater number of points, and some of it should be permitted to pass over the electric heaters under the seats. Under the present conditions there is not enough fresh air in the cars; there is no systematic ventilation; the employees of the road do not appear to be instructed to follow any rules with respect to ventilation; the temperature is not maintained within proper limits. The committee believes that while there are difficulties in the way of securing satisfactory ventilation, and that perfect results cannot be secured when cars are overcrowded, a very considerable improvement could be secured by systematizing the ventilation and warming. As an aid to ventilation, it is recommended that the transoms in the monitor tops be protected on the outside by guards to prevent the entrance of sudden gusts of wind. The transoms should also be connected and operated by a lever placed at the ends of the car and controlled by the conductor.

The spaces under the seats of horse cars, where now closed, should be opened, so that the dirt and refuse often thrown into the window casings behind the seats may be seen and promptly removed.

The floors and seat coverings of cars should be kept clean. Many of the surface cars at present have fixed slats on the floors and some have cocoa mats.

Wherever the public is subjected to exposure while waiting to take cars at termini or when transferring from one car line to another on the surface roads, suitable shelter should be provided. If physical conditions at those points are such that shelter cannot be provided in close proximity to the tracks, it should be provided in nearby buildings.

The interest shown by the Merchants' Association by no means represents the total effort being made by the people of New York city for improved conditions of transportation. Other organizations, notably the West Side Association, the Taxpayers' Association, the City Club, and some other forces, are at work to bring about improvements which the public feels it has a right to demand of the companies.

So far, the public movement for better street-car accommodations has been characterized by moderation and energy on the part of the people's representatives. The whole public is unanimous in demanding better facilities than can be afforded by any improvements now in sight. Each organization believes that important reforms can be obtained if a firm stand is taken toward the companies, and each is apparently ambitious to be the successful champion of the popular cause. A combination of the various forces at work might be desirable, to make the whole movement more effective, but so far as is known, no attempt at a combination of the various efforts has been made.

THE EARLY DIAGNOSIS OF GENERAL PARESIS.*

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I HAVE been prompted to choose this subject of the "Early Diagnosis of General Paresis" for my paper on this occasion by a number of experiences I have had in the past few months. Experiences, while they may not be uncommon for one who sees a number of cases of paresis each year, still are not so generally known but that they will bear comment.

Protean as are the manifestations of this disease it is not strange that it should often go unrecognized during its early stages yet there is probably no disease in which a failure to make a correct diagnosis is fraught with such manifest dangers not only to the patient but to his family, his friends, or in fact to any one who, not recognizing his condition, may be induced, for instance, to enter into business relations with him. It is during this early period that those unfortunate occurrences are so frequent which might have been prevented if the true condition of the patient had been recognized.

Manifesting itself in its incipiency by symptoms of defective intelligence, lack of judgment, memory defects, and moral obtuseness we frequently see the most pitiful of pictures—a pre-

* Read before the Broome County Medical Society, Binghamton, N. Y.

viously respected citizen, father of a family who occupy an enviable social position become at the height of his career an ardent worshiper at the shrines of Venus and Bacchus. Friends and relatives see nothing in these manifestations but the outcropping of original sin and are distracted by their inability to stay the career of drunkenness and vice upon which their erstwhile respected relative has apparently entered. How many heart aches, how many pangs of anguish, how many blushes of shame could be spared the wife and children of such a man if the family physician did but recognize in these occurrences the symptoms of the onset of a mental disease and could advise them what course to pursue?

An acute attack of maniacal excitement, the delirium of an acute toxic psychosis, are early recognized and even the slowly developing depression of the melancholic, or the gradual change of character of the paranoiac is usually appreciated before any serious harm can come. But here we have a disease, afflicting one when at the very zenith of his physical and mental powers, insidious in its onset yet capable of so changing the character in a few weeks that the previously honest, upright, moral, truth loving, sober citizen becomes the votary of every form of vice, sinks to the depths of drunkenness and debauchery and may even stain his hands in blood. But this is not the worst, all these things would ultimately find their explanation when the disease that was responsible for them came finally to be recognized and in the light of its diagnosis they would be excused. But it so happens that such a man as I have pictured to you is generally the guardian of the family exchequer. When this is the case it almost invariably happens that he wastes considerable amounts of money in his debauchery, becomes involved in unfortunate and ill-advised speculations often at the solicitation of "sharpers" who only too well appreciate his poor judgment and gullibility—and finally, when he was succeeded in hopelessly entangling his business affairs and plunging himself into debt he is committed to an institution and his family only then come to a realization that they are penniless. The pity of it all is that it might have been prevented.

It is because I have had the possibilities just outlined impressed upon me by a number of cases of late that I thought of taking up with you this evening a discussion of the diagnosis of paresis and the signs and symptoms on which such diagnosis depends.

Before starting on a detailed discussion of the separate factors on which a diagnosis of paresis rests I wish to call your attention to the pretty generally diffused misapprehensions regarding it. First, the diagnosis of paresis does not rest primarily upon the mental symptoms. Paresis is a gross organic disease of the brain and its diagnosis must rest in the main upon an appreciation of the physical signs which these changes bring about, particularly in the field of motor disturbances. Second, grandiose delusions of great wealth, power, and strength are in no wise a necessary part of the disease and while the so-called classical type of paresis does present such delusions, still there are excellent reasons for believing that this type is becoming less frequent.

Now to begin with, let us consider first, for convenience, the least important features of paresis for diagnostic purposes, namely the mental symptoms. I have already indicated in a general way what these are. They are symptoms of dementia, gradual, progressive, and uniform failure of the mental powers upon which, it is true, may be engrafted the picture of almost any psychosis but which inevitably and of necessity modify that picture in a way more or less characteristic of the underlying defect. This dementia manifests itself by failure of memory, defective judgment, inability to apply the mind consecutively for any length of time, and failure of the moral sense. The picture from a mental viewpoint is then one of a gradually deepening dementia, correlated with organic changes in the cerebral cortex—to my mind a true organic dementia. If upon this basis of organic dementia there be erected mayhap symptoms of excitement or depression, delusions of a hypochondrial or grandiose nature, multiform hallucinations and illusions, a true delirium, these symptoms may properly be considered as unessential, accidental accompaniments. Developing as they do, however, upon a ground work of dementia we would expect them to manifest themselves differently than would be the case if their foundation had been originally an unimpaired mind. This we find preeminently to be the case. The grandiose paretic is not content with possessing a few paltry thousands but reckons his fortune by quintillions, he has solid gold carriages, harnesses set in precious stones and offers me each morning a fleet of ships to go around the world with, a million dollars and a thousand wives. The depressed paretic has caused the deaths of untold myriads of human beings, the hypochondriacal has no stomach, no bowels, no brains, etc. The delusions are marked by an absurdity which can only result from the defective judgment, and impaired intelligence of dementia.

These advanced conditions of delusional states, however, are not what I desire to particularly call your attention to, I merely wished to illustrate fully what I meant by my statement that the dementia of paresis was the underlying and essential mental symptoms. The demented type, without marked delusions or sensory falsifications is the truly typical variety of the disease and the dementia the basal element of all forms. This dementia may, however, not be apparent, it may be necessary to seek for its manifestations. In the very early stages the outward symptoms may be those of irritability, and an untoward restlessness which may exhibit itself in many ways, as for instance useless business activity, fits of violent rage over trivial annoyances, and slight lapses of memory. If the reasons for all these things be inquired into, however, they will be found inadequate, often puerile.

Let us turn our attention now to the more characteristic physical signs of the disease which may be found in its earliest stages. Of these by far the most important are the oculo-motor and tendon reflex disturbances.

Of the oculo-motor phenomena the pupillary abnormalities are most important. The loss of the light reflex with retention of the reaction to accommodation, the Argyll-Robertson pupil, is one of the most valuable diagnostic signs of beginning paresis, in the absence of tabes, as it frequently occurs very early. Siemerling* in an examination of 9,160 insane persons found this symptom in 1,639 and of this number 1,524 were paretics. A sluggish reaction to light is also sometimes found, a condition which probably is the beginning stage of the Argyll-Robertson pupil. In examining for these conditions care should be taken that movements of accommodation are not mistaken for reactions to light by having the patient fix the gaze upon some object, the pupils should be equally illuminated, and the light should be not too bright, as under these circumstances a sluggish reaction might be masked. Earlier still, Berkley believes, can often be found loss of the consensual light reflex. The consensual reflex consists in the dilatation and contraction of the pupil of one eye when the other is shaded or exposed to direct light. It is quite possible, I believe, that the loss of this reflex is also an earlier stage in the development of the Argyll-Robertson pupil and should always be tested for. This condition is usually found when a sluggish light reflex is present. Lewis† claims that a still earlier symptom than any of these is the loss of the sympathetic reflex (the dilatation of the pupil on stimulating the skin of the neck). 63.6 per cent. of his cases showed this symptom, several of them with normal light reflex both directly and consensually.

Of the tendon reflexes the only one that need be considered is the knee-joint. This may be normal, exaggerated, diminished, or lost on one or both sides. The exaggerated reflex is most common, but I agree with Sommer‡ in his statement that although this is so the absence of the knee-jerk is of much greater diagnostic importance as there are many more causes for its exaggeration other than paresis than there are for its abolition. This sign also, of course, depends for its importance upon the elimination of other possible etiological factors, especially tabes.

If now we find a patient in middle life with Argyll-Robertson pupils and abolished knee-jerks and tabes can be eliminated, we may strongly suspect paresis. If in addition we learn that there has been a great change of character in the individual, if he has become irritable and restless, fails to remember business engagements, is less careful of his personal appearance, and presents, in short, a host of minor mental symptoms which individually mean nothing but in their ensemble speak for mental deterioration, we need not hesitate to be convinced.

It is rare, however, that a diagnosis has to be made from such meager facts. Other signs are usually available. First of these I would call your attention to the speech. The stammering, stumbling, hesitating speech of the advanced case with its syllabic reduplications and omissions and often explosive character is something so characteristic that once heard it is never to be forgotten. But when there exists this amount of trouble the diagnosis is easy. It is in the very early stages that the special defects are often difficult to make out. At this time there may be only a suspicion of the true paretic speech in the slight hesitation and occasional almost unnoticeable defect in a single word. Such patients often say test words such as, hippopotamus, communicability, circumstantiality, perambulator, quite correctly. It would seem that the defect is as yet so slight that the mere effort expended as the result of conscious attention is sufficient to overcome it. In such cases the test words should be combined into sentences to catch the patient unawares as it were. I have a patient now who says test words and phrases perfectly, yet there is a noticeable defect in an occasional word in her ordinary conversation. If she be asked, however, to repeat this word it is done promptly and correctly. If the speech defect is slightly more marked we may notice a slight tremor about the muscles of the mouth which is brought out by a difficult word or by emotional excitement. We should be careful in interpreting this tremor, however, as we find it present in many conditions other than paresis.

Characteristic of paresis, and occasionally but not frequently occurring early in its course, are the so-called paretic seizures. These may vary in severity and character all the way from the light syncopal attacks with pallor and temporary prostration to severe apoplectiform and epileptiform crises. The epileptiform attacks may be of the petit mal or grand mal type and without the history are indistinguishable from true epilepsy. The apoplectiform seizures resemble in every way true apoplexy but the resulting paralysis is less apt to be permanent, in fact it may entirely disappear in a most remarkable fashion in two or three days. Transitory muscular paralyses, not infrequently of the extrinsic eye muscles may, however, occur apart from these seizures. They usually are of short duration and clear up rapidly.

These then are the symptoms we must look for as early manifestations of paresis: Argyll-Robertson pupil, abolished knee-joint, slight speech defect, transient palsies, and paretic seizures accompanied by a gradually progressive mental enfeeblement. The only other early symptom that is diagnostically of importance is optic nerve atrophy but although this is often of early onset it is from its very nature usually overlooked. I have in mind now a case, however, who spent much time during the early stages of his disease in endeavoring to get his vision corrected and

* Cited by Berkley in "A Treatise on Mental Diseases."
† W. Bevans Lewis: "A Text-book of Mental Diseases."
‡ Robert Sommer: "Diagnostik der Geisteskrankheiten."

whose condition was apparently not recognized by any of the men he consulted regarding his eyes.

As a rule our patients come to us with much more marked disturbances than I have outlined. They generally present well-marked speech disturbance, a similar defect in writing marked by tremor, omission and reduplication of syllables and words even to complete illegibility, tremor especially of the facial muscles, muscular weakness, transient or permanent palsies, and maybe a history of seizures, together with a well-marked dementia or possibly the symptoms of a well-developed psychosis. These further symptoms I shall not discuss as the early ones are still all present and the diagnosis is usually easy.

The principal diseases for which paresis may be mistaken in these early stages are tabes, acquired neurasthenia, some one of the pure psychoses, alcoholism, brain tumor, cerebral syphilis and disseminated sclerosis.

The principles of its differentiation from the various psychoses I have indicated already. The presence of the underlying dementia in a person of middle age should make us at once suspicious and if to this condition the physical signs can be added a diagnosis can with certainty be made.

From tabes dorsalis the differentiation is not so easy and in fact there remain a few cases where it is impossible and we must wait for the development of further symptoms. This is due to the fact that in their early stages the physical signs may be identical in the two diseases. When, however, we observe a case in which the tabetic signs are somewhat atypical with for instance preservation of knee-jerks or marked ataxia of the arms we may be suspicious of paresis and if with this condition we find associated evidences of dementia a tentative diagnosis is in order.

In differentiating paresis from acquired neurasthenia the general mental attitude of the patient is of great significance. Whereas the neurasthenic is given to exaggerating his ills, to constantly complaining of his aches and pains and keeps close observation of every change of symptoms, the paretic is usually indifferent or may on the contrary consult a physician under protest and in the firm belief of the uselessness of so doing as he feels so well. This is not invariable, as I have seen paretics well advanced in the disease who were much concerned over their condition. The contrary state of mind, as illustrated by one of my parents, is more common. On her admission I discovered a well-marked left hemiplegia which she actually knew nothing of until I called her attention to it. In addition to this there is in neurasthenia no dementia, no disturbance of speech or writing, no history of seizures, the tendon reflexes are equal and not abolished, the pupils equal, respond to light and accommodation and are more apt to be dilated while in paresis they are frequently unequal and often very much contracted.

From alcoholism the diagnosis is often not so easy. The deterioration of the chronic alcoholic has much in common with the dementia of paresis. Here again we must turn to the physical signs and note carefully the historical facts. Following a long debauch, however, symptoms may arise, which, in the absence of a history, would warrant a diagnosis of paresis—the so-called alcoholic psuedo-paresis. These symptoms disappear, though in a remarkable manner when the alcohol is withdrawn.

Symptoms occasionally develop in the course of brain tumor which closely resemble paresis. The diagnosis must be made on the preeminently focal character of the physical signs in the former disease.

From disseminated sclerosis the differentiation is sometimes difficult. The combination of intention tremor, nystagmus, scanning speech and spasticity will, however, usually leave little room for doubt although some of these cases do ultimately develop the typical signs of paresis.

From cerebral or cerebrospinal syphilis the diagnosis is again quite difficult. If the lesion is a gummatous meningitis the signs are rather of multiple lesions than a diffuse process. If, on the other hand, the disease affects principally the vessels with resulting endarteritis obliterans, thrombosis and softening, the symptoms are focal and convulsions developing afterward constitute a true post-apoplectic epilepsy. Disturbances of speech and writing either are not present or, if they are, do not partake of the nature of a paretic disorder but are true aphasias due to focal lesions. Palsies, if present, are permanent and nocturnal headaches common. Antisyphilitic remedies produce immediate results in many cases.

In discussing the points of differential diagnosis I have not aimed to be exhaustive but rather succint. I have merely taken up the various factors which one should know to make an intelligent diagnosis and only those which the practitioner will find practical and such as are apt to be met with from day to day rather than the unusual and rare. Even if a certain diagnosis in a given case is impossible the presence in more or less degree of one or more of the symptoms outlined may serve to put us on our guard and by a solicitous watchfulness prevent those unfortunate occurrences often the result when the disease goes unrecognized for any length of time.

PULMONARY TUBERCULOSIS AS AN INFECTIOUS DISEASE; ITS EARLY DIAGNOSIS.*

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IT is over 100 years now since it began to be suspected that tuberculosis was probably an infectious disease. It is nearly forty years since Villemin proved its infectious nature. For the last twenty-five years its contagiousness has entered as a precious bit of popular hygiene and

* Read at the annual meeting of the New York State Medical Association.

sanitary science into ordinary tradition. All this has been with the happiest results, and to none have they been more welcome than to physicians, yet the members of the medical profession have not yet practically applied the recently acquired knowledge of the disease as one of the group of contagious diseases. With regard to the other diseases of this group, the physician's first question, when called to see a case and when he suspects an infectious disease is, "Have you been exposed to any contagion? Are there cases of contagious disease in the neighborhood?" The most helpful auxiliary in diagnosis is the knowledge that there are other cases of the same kind with which the patient has been in contact.

Since then tuberculosis is a contagious disease this should be the first care of the physician to ascertain whether the patient has been in contact with others suffering from the disease either at home or at school, or at work. Should contagion prove to have been possible, even if there are no definite localizing symptoms of the presence of a contagious disease, the physician takes the pulse and temperature and if these are at all disturbed he does not consider that he is justified in making a negative diagnosis, even though he finds no local symptoms confirmatory of his suspicions. The patient is warned of the possibility of there being an infectious condition present and is asked to take proper precautions as regards rest, diet and due care until there are no further disturbances of pulse or temperature to be found.

It seems to me that these three preliminary subjects, contagion, the pulse and temperature, which appear to demand so much attention in other infectious diseases, should have the same prominence given them in the physician's mind in cases where tuberculosis is suspected.

At the present time we realize better than ever before the necessity for the very early diagnosis of tuberculosis. Incipient cases may be perfectly cured. Initial cases, where the lesions have not become destructive, may be relieved to such an extent and a curative reaction promoted to such a degree that the diseased area may become completely walled off and, with proper precautions, never again give any trouble.

With regard to the first of these, the possibility of contagion, not near enough attention is usually given. As a rule, the patient is asked whether other members of the family are suffering or have suffered from the disease. This seems to countenance the old idea of the heredity of tuberculosis, and the patient's replies are usually framed on this hypothesis with consequent loss of information that might be of service to the physician in many cases. The important question is not whether relatives are suffering from tuberculosis, but whether any of those living in the same house are apparently suffering from the disease. It is not alone the living rooms, however, that are important in this matter, but especially the workrooms. Those employed in factories should be asked whether any of their coworkers are suffering from chronic cough or whether any of those with whom they associate frequently have such an affliction.

In this respect the occupation itself is often of importance. It is well known for instance that laundresses, that is to say, washerwomen, suffer nearly twice as frequently as other working women of the same class in life from tuberculosis, because of the facility with which they contract tuberculosis from infected clothes. Another class of working women, who suffer severely in the same way are scrubwomen, the contagion evidently being attributable to the careless habit of expectoration that still obtains, notwithstanding the crusade in this matter in recent years.

With regard to the other two preliminary matters for observation, the pulse and temperature, it has seemed to many observers that the solution of much of the mystery of very early cases of tuberculosis is contained in them. As soon as a chronic infection develops anywhere in the body there is a disturbance of the pulse. Especially when this infection is due to the tubercle bacillus, the pulse may be disturbed a long while before any sensible variation of temperature is caused by the toxins of the bacteria. It is well known that cold abscesses may not produce any variations of temperature, and yet may be detected by the fact that the patient's pulse rate is usually far from normal and subject to facile and frequent variations for very slight causes.

When a patient comes for diagnosis, in whom there is suspicion of tuberculosis and the pulse is found to run above 90, even when there is no excitement it is more than probable that there is something wrong somewhere in the body. It is well to remember in this respect that insurance companies refuse to take risks on subjects whose pulse is not below ninety at the time of the medical examination. Of course, a single examination may mean nothing in this matter. The only way to obtain definite information is to have the patient keep a daily record of the pulse movement, that is to take the pulse regularly three times a day and after four or five days present the record to his physician.

A rapid pulse tells the tale of a chronic infection in the body sooner than anything else and the presence of a pulse constantly above 85, running above 90 in the afternoons, is of itself a very suspicious circumstance, unless of course it occurs in persons who are known to have a family tendency to rapid pulse. The toxins of the tubercle bacillus absorbed into the system disturb the pulse usually a good while before they cause any disturbance of the temperature. In fact, there are those who insist that there is never any disturbance of the temperature until secondary infection of tuberculous foci has taken place and consequently pyogenic toxins are being absorbed into the system.

With regard to the temperature, however, it is important not to depend on one or two or even three or four observations, especially if those ob-

servations are taken about the same time of day. There is, as is well known, a physiological rhythm of temperature, in every individual, with a difference between the lowest and highest daily temperature of at least a degree and a half, Fahrenheit. While the average daily temperature is about 98.4° F., the morning temperature, that is before eight o'clock, is often 97.5° F., or even lower. The afternoon temperature may be as high as 99° F. No two individuals are exactly in accord in this matter. The variation between lowest and highest should be, however, less than a degree and a half. If an individual presents a daily temperature range of more than a degree and a half, there is probably some fever present. If the variation is more than two degrees it is practically sure that there is a febrile movement in the case.

As was pointed out by a German observer, Dr. Marx, in Professor Brieger's clinic, at the Charite in Berlin, the morning temperature in healthy individuals is not infrequently below 97° F., and consequently the afternoon temperature should not exceed 98.5° F. to be within the normal. There is only one way to decide whether the patient's temperature is abnormal and that is to have a series of observations extending over a number of days, at least three to five. The temperature should be taken before eight in the morning, shortly after noon and about six in the evening. If the daily temperature range proves to be more than a degree and a half then there is ample confirmation for any suspicions that may have been aroused with regard to the presence of tuberculosis in the case. At least, it is sure that there is some factor disturbing the bodily heat regulation and consequently leading to perhaps serious metabolic derangement.

These may seem refinements of diagnosis. No patient who is suffering from the hideous thought that perhaps incipient tuberculosis is already at its ravages will find the request for pulse and temperature observations extending over several days too inconvenient. On the contrary, they will usually appreciate the definite information that is thus afforded their physician with regard to their bodily condition and will not hesitate to be of all the assistance possible in so important a matter.

To have discovered that the pulse and temperature are disturbed and even that the patient has been exposed to tuberculosis, does not definitely settle the diagnosis of pulmonary consumption, but it gives the physician important auxiliary information. Especially are these circumstances strongly corroborative of any suspicions of disease that may exist for other reasons. If the patient has been bothered by a cough that has persisted for some time and has been accompanied by some loss of weight, then there can be very little doubt of the nature of the disease. Knowing the patient's general condition in this way, the preliminary knowledge for a proper appreciation of even very slight physical signs in the lungs is secured.

In older days, physical diagnosis laid much stress on the recognition of cavities in the lungs and of even the size and shape of cavities. Gerhardt's change of note, caused by the diameter of the cavity being greater in the horizontal or the vertical plane with a consequent difference in the form of the cavity if it contains any secretion when the patient's position is changed, was one refinement. Wintrich's change of note, due to the emptying of a cavity containing secretion, was another. Stress is laid on various physical diagnostic signs, which were supposed to differentiate various degrees of degeneration in the lung. Practically all of these rather difficult refinements of physical diagnosis are useless as far as any good to the patient is concerned. If the disease has advanced to the stage of cavity formation, then very little information of any significance as regards treatment or even prognosis can be gathered from even the most careful refinements of physical diagnosis. The progress of the disease depends not on its extent but the individual resistive vitality.

The important consideration is to discover the disease at the earliest possible moment and by warning the patient of its ravages secure his complete cooperation for its cure. Diet and fresh air will, at an early stage of tuberculosis bring about a complete cure of the disease. To wait, however, until percussion will give the definite information in this matter, or until bacilli are discovered in the sputum, is frequently to delay the assurance of diagnosis and consequently put off the careful treatment needed for these cases.

By percussion, as was shown by Oestreich working in Virchow's laboratory, no lesion smaller than a large cherry can be detected. Even for this the lesion must be situated rather close to the surface of the lung. Tubercle bacilli frequently do not appear in the sputum until after extensive consolidation has taken place.

As a matter of fact not rarely tubercle bacilli do not appear in the sputum until there has been a secondary infection of the affected area through the wall of the bronchus. Unless the tuberculous focus is close to the bronchus there may be considerable consolidation before any true tuberculous material finds its way into the bronchial lumen to be expectorated. If possible, the diagnosis must be made before this time. Almost as soon as any consolidation takes place, however, there is a roughening and a lengthening of the expiration in the affected area. This is the first physical sign that can be detected. Alone it is scarcely enough to make the diagnosis of tuberculosis absolute. If there is disturbance of pulse and temperature, however, together with a localized area of prolonged, slightly roughened expiration, then there can be no reasonable doubt of the existence of the tuberculous lesion. There is no need to wait for râles and the crepitant râle which is sometimes depended on as one of the earliest auscultatory symptoms of tuberculosis is not heard in those cases until the tuberculous process has affected the pleura and thus caused

the adventitious sound which is recognized as a râle.

The first part of the lung to be affected is the posterior portion of the apex, as a rule. The left apex is said to be a little bit more frequently affected than the right apex, and the statistics of cured cases of tuberculosis, as seen in the post-mortem room, seem to bear this statement out, but this greater frequency of liability to invasion by tubercle bacilli is not sufficient to make it of the diagnostic importance it sometimes is considered. It is not always the custom to examine the posterior portion of the upper part of the lung. Examinations are made just below, and occasionally above, the clavicle in front, while the more important posterior portion is neglected. When there is no sign beneath the clavicle, differences in the breath sounds are often noted above in the superscapular region.

This portion of the thorax, then, should always be examined with the greatest care. Any difference in the breath sounds is very significant. Another portion of the lung, only affected in anomalous cases, though these occur with sufficient frequency to make it of some importance, is along the lower border of the upper lobe. In order to detect physical signs the examination must be made just above the line connecting the nipples. Too much insistence, however, cannot be placed on the teaching that even the earliest physical signs in tuberculosis cannot be said to represent an incipient stage of the affection, but rather one that is already considerably advanced.

What I would plead for, then, in cases of tuberculosis, is the detailed study of the individual, taking account of all the constitutional symptoms, of the environment of the patient as regards possible tuberculous contagion, so as to recognize the earliest disturbance caused by the presence and growth of the bacillus in the tissues. If cases are detected before physical signs are present to confirm the diagnosis there will always be a doubt as to whether the case was really tuberculous or not; but provided patients get better, improve in general health and survive the danger of tuberculosis, there will be no justifiable criticism of prematurity of diagnosis. Early cases of tuberculosis are comparatively easy to cure; late cases are impossible to cure. The earliest possible detection must be the watch-word of the progressive physician.

PATHOLOGICAL CHANGES IN TISSUE UNDER THE INFLUENCES OF THE X-RAY. *

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THE subject of the pathological change in tissue under the influence of the X-ray is one of considerable latitude, and in this article it will be covered only in a general way, as detail must be avoided on account of time. In dealing with this subject in another paper, it was considered under two heads: first, the change observed in normal tissue; second, in abnormal tissue; and the conclusions reached at that time seem to still hold good. That no single form of degeneration alone is characteristic to the X-ray, and the form of degeneration observed depends entirely upon the tissue exposed and the method of X-ray application. Here may be seen the scope of this study and the cause of the great difference of opinion that exists among various authors. In some ways the effects of the X-ray might be compared to fever, as for instance in a case of high fever the first degeneration that usually takes place is a hylogranular, then, if the temperature continues, a fatty change follows, the recovery here depends upon the amount of damage done before the fever subsides. In another case, where the fever is continued for a long time with remission and intermission, we have the more chronic forms of degeneration, such as the amyloid change, etc. The X-ray is capable of the same latitude. Those who have watched an X-ray tube in operation and noticed how the vacuum will change from time to time will wonder how, any constant result can be obtained, but the operator after a little practice will be able to judge to a great extent about how much energy a certain lamp is capable of giving under certain circumstances.

Then again, with this wide variance of X-ray energy, we have a still more important irregularity to consider, and that is the tolerance of the X-ray by certain individuals always being on guard for that person who has a frightful susceptibility to unpleasant effects. And what seems still more extraordinary is the fact that a person will tolerate a certain amount of X-ray from one apparatus, while apparently the same amount from another will cause trouble. No doubt this is due to our imperfect methods of measuring the amount of X-ray energy. Some have thought that the so-called "brush effects" have a great deal to do with these unexpected results, but if this is so it seems queer that we have not seen these changes before in other fields, but this subject still needs some careful study.

The effect of the X-ray upon tissue must differ from anything else, for the reason that it penetrates to such a depth, and diverges as it does so; therefore a greater area is covered below than upon the surface, while its energy is only modified by the distance from the source, and the resistance of the intervening tissue. The question of how the X-ray acts, must be overlooked for the time being, unless we accept the explanation that it is an electrochemic disturbance of the ultimate cell elements.

The inflammatory effects of the ray upon the tissues of the body have been termed a "burn," although some objection has been raised to its use, it seems to fill the sense in this instance, just as when used for an ulceration caused by some chemical. This effect may be so slight as to cause only a perceptible reddening of the skin followed by a faint tanning, there is very little

* Read before the American Roentgen Ray Society, Philadelphia, December, 1903.

local disturbance, with no systemic effects. From the work of some German authors in this field it would appear that this process closely resembles sunburn, but the effects are much deeper. In the case of severe burns, the process is unique in itself and differs from all other forms of degeneration and regeneration, although very irregular in its course. The period of incubation may be from a few hours to months, and during this time the patient may complain of severe pain in the affected part, in some instances the pain may be quite severe but intense pain does not necessarily mean a severe burn; in fact what might be termed a mild burn often produces the most discomfort. The general systemic disturbance in these cases are quite as irregular but in a general way follow the course that might be expected from ordinary ulcerations in the affected part. The first observation is that of a surface hyperemia, which is followed in a few days or even longer by a slough which gradually extends over the whole involved area. Its appearance is deceptive, it looks as if it could easily be removed but on the contrary it is quite adherent; however, after a given interval, part by part will separate and, as these pieces are removed the underlying structures have the appearance of healthy granulation tissue, but in a few days another slough will form, this process will sometimes continue for months. The appearance of the slough is like that of a bad scald, it is usually moist but differs from it in the fact that it is extremely hard to remove and will often cause intense pain. The explanation may be this, in the case of a scald the tissue dies en masse and separates en masse, while in the case of the X-ray burn the cell necrosis is only one cell at a time, the living and dead cells are intertwined, no doubt that many of these cells would recover if their nutrition was not impaired by these surrounding dead cells, and, acting like any foreign body, would also cause pain.

When the slough of an X-ray burn is carefully removed it gives the appearance of a highly magnified trabecula or a homelier simile, that of a honey comb. The line of demarcation usually seen in other forms of gangrene are practically never seen here, and even when the ulceration has greatly diminished in size by healing, these sloughs still continue to form. The scars of these burns are curious, in very severe cases where the deeper structures are involved they resemble those from fire, but the surprising fact is that when the ulceration does not go below the superficial structures practically no scar will be formed and in a month or two after the ulceration has healed the skin will be as soft and as pliable as that which surrounds it.

At this point is would be well to call attention to a membranous deposit that forms over moist ulcerated surfaces, when the X-ray is applied over a long interval of short exposures, producing only a slight amount of reaction, from its appearance it would suggest diphtheria, except that it is whiter and not so dense, although when it is removed it leaves a bleeding surface. It closely resembles the slough of a bad burn, only that the membrane is entirely superficial.

As is well known, these X-ray burns are extremely painful in most cases, yet at the same time in some instances the X-ray will relieve pain, even anesthesia of the exposed part has been observed. Several theories have been advanced in explanation of these facts, but so far we have no substantial proof. In the case where anesthesia is produced after X-ray exposures where no pathological process exists, the explanation might be, that there is a temporary degeneration of the terminal nerve filaments which causes an impairment of function. This can hardly be offered as an explanation in the case where the pain is relieved in cancer, yet it will be noticed that if these cases receive too much X-ray treatment they will suffer pain, but of a different character from the pain before treatment. These facts, however, would suggest that the effects of the X-ray must be upon the cell elements in the exposed parts. In other words, when a cancer is being treated and the X-ray is applied in sufficient quantity to relieve pain, there will be very little disturbance of the part; on the other hand, when too much X-ray treatment has been given, an active inflammation follows, which involves outside structures and pain in consequence.

The study of the effects of the X-ray upon tissue microscopically in all instances offered here has been upon pre-existing disease. It has not been my fortune to be able to procure a case of simple burn, and in most instances these cases object to the knife, therefore this study is doubly tedious. Some facts have been brought forward that seem to hold good in normal and abnormal cases, but on the other hand there still exists a great deal of mystery that seems almost impossible to explain; take, for instance, a malignant growth surrounded by healthy tissue, it is exposed to the X-ray and it simply melts away, there is very little disturbance of the surrounding tissue, not only macroscopically but microscopically as well, this is well illustrated by the following cases:

Case I.—Mrs. X., for several years has been suffering from an epithelioma of the face just above the alæ of the nose; it was at the time of treatment about the size of a five-cent piece. A section was taken from the edge of the ulceration just before the first treatment, and the microscope confirmed the clinical diagnosis. X-ray treatments were given three times a week, from an 18-inch coil, on a 110-volt current, at 3 ampères, the vacuum of the tube was about 5 inches, spark gap, the tube being 10 inches from the patient and time of exposure 10 minutes, the fluoroscope showed only a dull shadow of the hand. After the sixteenth treatment another section was removed from the edge of the ulceration, which at this time had healed to about one-third its former size. During the process of healing literally no reaction of the surrounding skin was produced and upon examination of the section very

little difference could be seen except for some slight degeneration of the cells, otherwise it was a typical epithelioma and a few weeks later, after the ulceration had healed, sections showed simply typical scar tissue. About the same observation was made in the case of Mr. S., which will be mentioned later.

Although in the reports of cases there is a wide difference of opinion as to the kind and degree of degeneration, many authors, however, speak of the vascular changes and most of them seem to agree that there is a thickening of the vessels, as was observed in the following case:

Case II.—Mr. P., carpenter, thirty-four years of age, spindle-cell sarcoma of the leg. About five years ago he noticed a small tumor over the tibia about four inches above the malleolus; at first it did not annoy him, but as the tumor grew it became painful. He refused a radical operation, but about three months before he began X-ray treatment, the mass was removed. At that time it was about the size of a split baseball, the wound did not close satisfactorily and recurrence was very rapid. At the time he began X-ray treatment several nodules about the size of marbles existed along the line of a very indurated and excavated scar, which was about 2½ inches long. They offered what would seem to be an ideal case for tissue study and it was the intention at that time to remove these nodules at intervals of every two weeks, but under daily treatment they disappeared in less than three weeks and only one nodule was removed on the ninth day. The X-ray was from a 15-inch coil, 6 storage cells, a Queen tube at about a 4-inch vacuum, the tube was about 10 inches from the patient and each treatment lasted about ten minutes. It should be said here that the ultimate result was not as favorable as might have seemed, for it recurred six months later and the man discontinued treatment. The reason for removing the section before the fourteenth day was due to the great softening and diminution to almost half the original size, there was at this time considerable erythema of the overlying skin. The sections showed considerable cell degeneration with invasion of leucocytes and a thickening of the vessels with deposits on the inner surfaces. The amount of degeneration did not seem to be in accordance with what might be expected. The vascular disturbance here was rather interesting, in a part that was rapidly diminishing, the vessels were thickened and in places were almost closed by cellular deposits, yet in the other cells there was a retrograde metamorphosis. The plugging of the vessels might explain the formation of these gangrenous patches after X-ray exposures, yet if this was the only cause, the degenerating process might be expected to subside sooner than it does, at the same time we should expect other embolic complications, perhaps these cases of pneumonia that have followed X-ray burns are due to this cause.

In another case of epithelioma of the face (Mr. S.) of thirty years' duration, sections were examined from the edges of the wound, the first section was taken after the first treatment and the other about three months later. There was very little difference between the two sections although the ulceration had closed in considerably. But while this was occurring another curious process had developed over certain areas, particularly in the deeper portions, there appeared a quite prolific growth of granulation tissue, of a pinkish color, much the same appearance that this tissue presents around tuberculous sinuses which have just been well washed with peroxide of hydrogen. Microscopical examination simply confirmed the clinical observation.

The examination of three sections from a rapidly degenerating epithelioma of the chin showed very little difference between the different sections. They were taken from the edge of the ulceration, the disease occurring in a man forty-six years of age. The X-ray in this case failed to produce any improvement, in fact it seemed to produce more irritation.

At this point it would be well to consider some of the work that has been done in this field and it will be noticed what a wide variance exists in their summaries.

Sequeira states that two definite effects from the X-rays are observed by the microscopical examination; first, a destruction of the epithelial cell, the nucleus and protoplasm undergoing lysis; in some cells there was a definite fatty change. Second, a stimulation of the connective tissue elements causing the formation of healthy scar tissue. Walker, in sections from a rodent ulcer, healing under the influence, found that a fibromyxomatous degeneration was taking place. Beck found a colloid change in an adenocarcinoma. McCaw found the same change in an epithelioma of the uvula. Ellis summarizes from the microscopic examinations of four cases: First, necrosis of cells and trabeculæ of varying degree. In Case I there was also marked fatty degeneration, fewer areas of lymphocytic infiltration in one case after exposure, about equal numbers in the others, a tendency to occlusion of the vessels by deposits on their inner surfaces, practically entire absence of infiltration by polymorphonuclear leucocytes.

In regard to this last point, Dr. Ellis's observations are rather interesting, from the fact that he has given this point very careful study. Mayou, in contradistinction to the above and like most other observers, found a large number of leucocytes, but differs from most others in the fact that he observed that the vessels were dilated. In another instance of a large tumor that had greatly diminished under the use of the X-ray, no change was noticed that could be attributed to its use.

Stewart, assisted by Nickerson, Wilson and Man, made an exhaustive study of a case of epithelioma of the hand and came to the following conclusions: (1) It is probable that when epitheliomata react favorably to the X-ray treatment that characteristic histological changes will be found; (2) the important early changes are fatty degeneration and vascularization of the epithelial

pearls; (3) leucocytic infiltration and various degeneration processes complete the destruction; (4) bodies indistinguishable from Plimmer's bodies multiply as epithelia degenerate.

When comparing the above results we find them directly opposite to those of Dr. Ellis, and the reason is due to the different clinical methods used in the X-ray treatment. In the case of Dr. Stewart no doubt there was some X-ray reaction, that is, an overaction, while in the cases of Dr. Ellis there was no great amount of reaction. This fact will be noticed in the difference between the cases of Mr. P. and Mrs. X., and Mr. S., and leucocytes might be looked upon to hold the following position: First, that they will be observed where we have an overstimulation of the parts by the X-ray; second, in cases that show no reaction leucocytes will not be observed. Allen, however, concludes that leucocytes are increased in the exposed areas immediately.

Some other points in Stewart's paper need careful attention. He refutes the statement of Unna that epitheliomata never undergo a fatty change, and as to the vascular changes he observes marked evidence of the formation of new blood vessels, noticeably in the centers of the epithelial pearls. His specimens showed no signs of an obliterating endarteritis.

Pernet examined tissue from a case of lupus vulgaris, which six months previous had received about 14 treatments about ten minutes each and given daily. He found the collagium disjointed and to some extent disintegrated, the elastin had been destroyed. The hair follicles and sebaceous glands had also disappeared, while the sweat glands showed surrounding infiltration and degeneration. A large vessel in the subcutaneous stratum showed thickened walls, and in places the upper layer of the corium showed a fibrous change.

From the above observations one would naturally expect considerable disturbance of the normal tissues, when they cover some deep growth that is being treated, especially so in the case of abdominal tumors, yet in many instances have large inoperable masses been treated, until complete absorption has taken place, and with very little disturbance of the overlying skin; no doubt that some change does take place, but it never seems to lead to any grave consequences.

The opinion has been expressed by some that all cases of malignant disease should be treated until considerable reaction is observed, but this intense reaction is not necessary, for in fact, when these cases react favorably to the X-ray they will usually do so with very little disturbance of the surrounding structures and over reaction will only lead to a necrosis of the tissues and the healing process will be delayed while the patient will suffer more pain, in some instances it has been looked upon as the cause of recurrence of the disease. Some operators advise the use of the ray until a severe burn has been produced, with the idea that it will have a good effect in retarding metastasis; this has not proved to be so clinically and when one considers the natural history of these cases, this idea is absolutely lacking in support, when we consider the limited area treated, and then, how early and how distant these metastatic processes have been found in the normal case. Sections from the case of K. G. were made from a nodule under the right axilla, the original scirrhus was of the left breast.

Another false idea exists regarding the prognosis of deep and superficial growths, the last are supposed to be much more amenable to treatment; the fact is, however, it is not the location of the disease but the form. The natural course of a superficial skin carcinoma is often thirty years; commonly fifteen years. Now compare this with the rapid progress of a breast or gastric carcinoma and an entirely different aspect presents itself; in these cases the primary process may be treated with success when a secondary process is discovered, and in rapid succession others follow, until the patient succumbs of exhaustion. Slow-growing deep growths have done well under X-ray treatment, while, on the other hand, rapid-growing superficial growths will often be irritated.

It would be impossible to review in detail all of the different phases of this subject and discuss them, but from what has been given the conclusions might be as follows: First, that no single form of degeneration is alone characteristic to the X-ray, and that the form of degeneration observed depends entirely upon the tissue exposed and the method of X-ray application; second, it would seem that the effect of the X-ray was upon the cell elements in the exposed parts, but why certain normal cells, such as those in hair follicles, etc., should be more susceptible than other tissue is still a question of doubt, but in lieu of the vascular disturbance found by many observers it might be thought that this cause plays an active part.

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A HISTORICAL SKETCH OF SOME OF THE SO-CALLED CURES FOR CONSUMPTION WITH A FEW NOTES ON LATER-DAY TREATMENT.

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THE history of the treatment of pulmonary tuberculosis, or phthisis, is most interesting. The symptoms of this disease were recognized by Hippocrates and later, but not so clearly, by Galen. Going back one-hundred and fifty years we find that phthisis was considered a disease of a contagious nature, and, as a prophylactic meas-

ure, the Venetian laws directed the destruction by burning of the clothing and furniture of those dying of this disease. At the same time it was customary for the Sicilians to desert a phthisical patient and after his death to burn his bed and bedclothes, and to thoroughly ventilate and fumigate the apartment in which he lived. Yet Thomas, writing fifty years later, says: "It does not seem probable, however, that pulmonary phthisis is infectious; at least it is not regarded so among us at present, although Morgagni, Van Swirten and, of still later date, Morton were of that opinion."

That the character of the disease was not well understood by these earlier practitioners is evident from the method of treatment outlined and carried out by them. They treated the disease as though it were an *acute inflammation* instead of a chronic one. It is with wonder that we read of the good results obtained under some of the methods advocated. On the other hand, they recognized the value of outdoor life and exercise and advised a residence, during the winter at least, in a mild, dry, equable climate. They realized that only in the early stages of phthisis could they hope to see their efforts at treatment crowned with success, but it leads us to question their idea of incipiency when the diagnosis depended entirely on objective symptoms, no note being made of auscultatory signs. Hemoptysis was guarded against and treated as one of the causes of phthisis. As to its treatment Thomas writes: "The effusion is moderated by a strict observance of the antiphlogistic plan; by carefully avoiding heat and every kind of bodily exertion, by occasionally employing cooling purgatives, such as manna, tamarinds, phosphorated soda, sulphate of potassium, etc., and by making use of a light vegetable diet with refrigerants. As a measure not to be neglected, cold was applied to the genitals, or the feet and even the lower portion of the body was immersed. Sudden sprinkling all over with cold water or even one complete immersion was indulged in at times to stop a hemorrhage. Bleeding was resorted to if the patient "was hot, feverish, youthful and of plethoric habit with a hard jerking pulse." The operation was repeated according to circumstances. Contraindications were "marks of debility and laxity, and blood of dark color." An astringent used considerably in hemorrhages was acetate of lead gr. i-ii. Digitalis, to retard the pulse, "gave a very happy effect." Common salt and opium (for excessive coughing), in small and repeated doses were used, also hyoscyamus. If the patient was in danger of sinking from loss of blood, it was proper to apply a blister to the chest. After recovery and to prevent a return of the hemorrhage, the following regimen was the order: Small bleedings, refrigerant and cooling purgatives, strict adherence to an antiphlogistic regimen, avoiding vigorous exertions of the body, agitations of the mind, etc. Sailing, traveling in very easy carriages, swinging or riding gently on horseback were the proper forms of exercise. Bark of cinchona and chalybeates were given to persons "of lax fiber and delicate habit." These precautions were to be continued "beyond the period at which phthisis proves chiefly fatal which is usually between the nineteenth and thirtieth year."

The antiphlogistic plan, consisting of blood-letting, use of mild purgatives and a spare regimen, was considered the proper line of treatment when tubercles had formed or were about to form, although at this period opinion varied as to the efficacy of blood-letting. Thomas writes: "That blood-letting and the rest of the antiphlogistic plan may formerly have been carried too far in many cases, I readily admit; but certain it is that, for some years past, the opposite system has been carried to an equally hurtful excess." Venesection was believed to produce a resolution of the inflamed tubercles in the early stage, but not in confirmed phthisis. The diet was somewhat restricted according to the stage of the disease, as, for instance, "where the symptoms are but trifling and the patient cannot well refrain from animal food, he may then be allowed such as is of the lightest nature and most easily digested." We can readily see that those in the advanced stages of phthisis were not urged to overload their stomachs with any form of nutrition. Fermented liquors, especially spirited ones, were prohibited. Milk was found a valuable remedy, ass's milk being preferred, "whereas, to produce any effect, it (milk) ought to make a considerable part of the patient's diet. Instead of half an English pint night and morning only, as usually practised by phthisical patients, they ought to take it at least four times a day, eating a little bread with it so as to make it a kind of meal." No doubt at that time it would have been considered abuse of the digestive function to have ordered a patient to drink three or four quarts of milk daily, as is now commonly done. If the milk purged the patient, he was advised to add a little of the powder of prepared crab's claws. Women's milk was supposed to give the best results, but they found it difficult to obtain in sufficient quantity. If cow's milk was too heavy for the patient, the cream was removed. Buttermilk was largely used.

The patient was not allowed to expose himself to cold, because the physicians believed that it never failed to determine a greater quantity of blood to the lungs and other internal parts than was natural. A flannel waistcoat next the skin was recommended, and the patient instructed not to expose himself to the piercing northeast winds. They believed the tubercles to be induced and accelerated in winter and retarded in summer, which was their reason for recommending warm, mild climates for the phthisical during the cold months. They believed in the principle of amusing the mind of the patient and keeping alive the hope of ultimate recovery. With this end in view patients were sent to the hot-wells at Bristol, where, besides the waters, moderate exercises and amusements were indulged in. Some physi-

cians of the time believed the waters of these wells a specific, but to quote Thomas again: "I am decidedly of opinion that at least three-fourths of the cures attributed to all mineral waters ought rather to be placed to the account of a difference of air, exercise, diet, amusement of the mind and regulations productive of a greater temperance, than to any salutary or efficacious properties in the waters themselves." The above opinion, which holds to this day, is well borne out in the study of the advances made in the treatment of consumption from that period down to the present time.

In the advanced stages the patient was prevented from exposing himself out of doors during the winter, but they aimed to keep the temperature of his apartment at 62° or 65° F. To remove inflammation from the lungs or tubercles, blisters were applied and made perpetual by shifting them from the chest to the side and from the side to the chest. Measures that sometimes produce a good effect were issues or setons applied to the side or between the scapulæ. Topical bleeding by leeches and cupping were also practised. Factitious airs were formerly employed as inhalations, but fell into disrepute. Oxygen, considerably diluted, was regarded, in the language of the time, as "a gentle stimulus, which, by invigorating the various parts of the animal body, by communicating the firmness to the solids and energy to the fluids, does frequently obliterate the causes of morbid habits." Earth bathing and stabling with cows were recommended in cases of incipient phthisis. The vapor of spiritus etheri sulphurici dropped into warm water was inhaled "with considerable advantage to the patient." Digitalis purpuræ was held in high regard by some physicians as a new remedy in the treatment of this disease; but one writer remarks, "to speak properly, it is rather the revival of an old remedy long laid aside than a new one." Some considered it a direct sedative, others a powerful stimulant. Many regarded it as a specific.

Among other remedies used were: Hemlock in glandular affections; muriate of barytes in incipient phthisis and scrofula; mercury by a few in America. Emetics were exhibited in the early stages, two or three times a week, and considered to be "one of the most powerful remedies known" and "usually attended with a very happy effect." Cupri sulphas was the favorite remedy together with tartarized antimony and ipecacuanha. Troublesome cough was relieved by demulcents, and opiates only given when there was also restlessness at night. Hyoscyamus and humulus lupulus were employed when opium was contraindicated. Preparations obtained from the common garden lettuce, dried leaves of conium in sulphuric ether, as inhalations, and lichen islandicus were used for coughs, dyspnea, and purulent expectoration, respectively. Such was the treatment for the so-called first stage of phthisis.

For the second and advanced stages the idea was "to counteract, if possible, the effects of the absorbed matter, to mitigate the most distressing symptoms, such as cough, diarrhea, and colliquative sweats, and, lastly, to put the body in as good general health as possible by air, moderate exercises, and a proper course of mild, nutritive diet." Bleeding and purging in this stage, as formerly practised, were held to be improper methods. For frequent pulse and flushing heat caused by hectic fever, digitalis was given; uva ursi was given for the fever; and the use of emetics persisted in as advised for the first stage. Balsam of copaiba, myrrh (held in high esteem), and cinchona bark were variously administered in this stage. It was the prevailing opinion that constant exposure of pulmonary ulcers to the air prevented the healing, whereas, now we firmly believe the opposite to be true. Blisters, issues, and setons were also used in this stage, "to obviate inflammation and divert the matter." For profuse night sweats, seltzer water, mineral acids, and armenian bole were given. Some of the more advanced practitioners of a century ago, considering pulmonary consumption as entirely of a scrofulous nature, disapproved highly of the antiphlogistic plan of bleeding and a spare diet, even in the first stage of the disease, and recommended instead a nutritious diet of shellfish and animal food. The use of conium and sarsa in powder as medicines, warmth in dress by wearing flannels next the skin, heating the patient's rooms to the West Indian point (when he could not resort to a warmer climate), the application of blisters, and the frequent smart riding on horseback by way of exercise were all strongly urged.

In the last paragraph we see the light dawning on the medical men of that day as to the more complete and proper treatment of pulmonary tuberculosis. During the next fifty years we note the gradual acceptance of new and truer methods of treatment, while the old, vicious, and harmful forms were laid aside. Progress was made in diagnosis, the pathology of the disease was more closely studied, and a clearer insight gained as to the causes and course of this malady, which led to a more correct knowledge of the general treatment thereof. Just before the Civil War (1858) there seemed to be two prominent indications in the treatment of phthisis: (1) To prevent the further deposition of tubercles, and (2) to guard the lungs and the system at large against their injurious influence during their progress (Wood). To meet the first indication two objects were aimed at: (1) To correct the predisposition, and (2) to obviate the influences of the causes which excited the predisposition into action.

To correct the predisposition, exercise in the open air was considered by far the best remedy. The exercise was to be taken daily and unremittingly for months or years, and was not to be carried to the point of great fatigue, nor were the rigors of winter to interfere with it, but, properly clad, the patient was to venture out into all weathers. This was only emphasizing the need of air for consumption indicated fifty years be-

fore. "Dr. Joseph Parrish, early in his practice, observed the fatality of the modes of treating phthisis then in vogue as well as their frequently marked effect in hastening the march of the disease, and was induced to throw them all aside and return to the practice recommended by Sydenham, which advocated vigorous exercise and free exposure to the air." The patient was to be properly clothed and, when deemed necessary, the face protected by a veil. In choosing a residence, a place that was dry with a uniform temperature was selected. The interiors of Georgia, Alabama, and Florida were recommended for Americans. Excessive heat as well as excessive cold was to be avoided.

That cold climates were beginning to gain favor at this time is illustrated by the following extract from Wood: "It is a question, which experience must determine, whether the extremely cold, uniform and dry air of our high northern latitudes may not operate more beneficially on the health of persons consumptively disposed than the more relaxing climate of the south." A generous diet and the elimination of stimulant drinks, except in cases of debility, were recommended. Mental influences were to be regarded. Hygienic measures were not to be neglected for medicines, which were considered highly useful at times. Cod-liver oil came into use at this time and stood high in favor. Digitalis lost its position as a specific, but was still used for the rapid, feeble pulse. The bitter tonics were in vogue and iodine was recommended in the first stage. Blood-letting, while still practised, was no longer popular, leeches and blisters being preferred. It was deemed unwise to arrest habitual discharges or to remove long-established external diseases in the phthisical patient; therefore, fistula in ano, hemorrhoids, and external scrofulous tumors were encouraged as safe outlets of the morbid tendencies.

To obviate the effects of the tubercle in the way of cough, demulcents, opium, morphine, hyoscyamus, lactucarium, conium, stramonium, belladonna, and hydrocyanic acid were used. Dyspnea was relieved by compound spirit of ether, asafetida, aromatic spirits of ammonium, tincture lobelia, extract of stramonium, etc.

Hemoptysis.—Blood-letting was not entirely abolished, but was indicated when there was "much general excitement with a strong, full pulse." Cups, leeches, and blisters were used. The patient was kept at rest on a low diet, and such medicines as antimonials, citrate of potassa, niter, and ipecacuanha, with cooling drinks, were administered. Common salt was still given and, as astringents, acetate of lead, kino, rhatany or tannic acid combined with opium, and ipecacuanha in minute doses. Issues, setons, and pustulation with tartar emetic were less favorably regarded.

For the bronchial inflammation, tartar emetic, ipecacuanha, sanguinaria, or lobelia in small doses was advised in the early stage. In the advanced stages, they prescribed the more stimulating expectorants as the balsams, turpentines, copaiba, ammoniac, asafetida, and carbonate of ammonia; and for excessive expectoration, creosote, pyroacetic spirit, tar water, petroleum, and Barbadoes tar. Certain inhalations were in vogue for the second stage; volatile matters, as tar vapor, turpentine, and the balsams being the most popular, in addition to which trials of chlorine and iodine were made. Laryngeal affections were treated the same as chronic laryngitis. Digitalis at this time was principally employed to control frequent pulse, as were also wild cherry bark, hydrocyanic acid, and cimicifuga. For the colliquative sweats the mineral acids, acetate of lead, alum, tincture of the chloride of iron, etc., were most efficacious.

The use of emetics to cure phthisis had at this time gone out of practice, and efforts were made to prevent the occurrence of both vomiting and diarrhea. Great debility was met with a supporting treatment, although not as vigorous a one as employed to-day. To summarize the methods and remedies that were in use up to that time and either failed or dropped into disuse, we note the following: The use of emetics in the early stages; residence in a miasmatic district; exhalation from oak bark (tanners'); breathing habitually the air of stables in which were cows; inhalations of the various gases; and injections of strong solutions of silver nitrate into the air passages by means of a tube passed through the larynx. It was said that, fortunately for the patient, the majority of the injections probably passed into the alimentary canal instead of the lungs. A noted physician once told me in conversation that he had had a patient who insisted upon receiving what he supposed were intralaryngeal injections, claiming that he derived great benefit thereby. To quiet the patient, the doctor gave these injections directly into the esophagus to the perfect satisfaction of the patient and to the relief of the laryngeal symptoms.

Digitalis and hydrocyanic acid fell from the ranks as specifics, and various other remedies were laid aside. Compression of the chest and even paracentesis to induce collapse of the diseased lung were proposed, but were not practised to any great extent. In 1875, there was an increasing demand that greater attention be paid to the preservation of health and public hygiene. From that day down to our time, various drugs and methods of treatment have seen their rise and fall, while others have been improved and enlarged upon until they are now both popular and useful in combating tuberculosis. The treatment of to-day is not directed mainly at the symptoms and their sequelæ, as in former times, but the effort is made to remove the cause and to limit the further distribution of foci of disease, as well as to endeavor to prevent complications by the entrance of pyogenic microorganisms. Treatment has resolved itself into groups of remedies, most of them being external measures intended to limit the tuberculous process, to destroy or attenuate the virulency of the bacilli, and to promote an

absorption of the inflammatory products or a protective encapsulation and fibrosis of the diseased area. These methods are not to be depended upon alone, but should be regarded as auxiliaries to the first principles, namely, climate, hygiene, and dietetics combined, without which no cure can be effected. Instead of the word "climate" later developments have demonstrated that the term "fresh air" would, perhaps, be more appropriate; for the proportion of those who can afford to seek a prescribed climate to those who are compelled to receive their treatment in the home atmosphere is as 1 to 12 or about 3 per cent. And it is a fact that the fresh air, even of a large city, when obtained in abundance and in conjunction with the other two requisites, hygiene and diet, together with modern methods of treatment, has produced wonderful results. It is only within the past few years that there has been forced upon the professional mind the undeniable fact, that there is no specific climate required or to be found for tuberculars. We all know how notoriously bad, theoretically, the climate of Boston and Eastern Massachusetts is for consumptives, and yet our friends of the "Hub" are rejoicing in the statistics of the past three years, which have shown such marvelously good results in and around that much-abused district. Every practitioner knows from observation that the majority of cured cases of pulmonary tuberculosis have been cured at or near their homes, yet we still find prevalent the belief that would exile from home comforts to unforeseen hardships and discomfort every unfortunate sufferer from the Great White Plague. Perhaps one of the most valuable advancements made in the treatment of this disease is the rapidly increasing tendency to hesitate before exiling the patient, and to ascertain the special climatic requirements of each individual case before recommending a change. For example, a patient with a poorly developed left heart accompanied by tachycardia should never be sent to an elevation above 1,000 feet. Cases presenting large areas of pulmonary involvement can be more successfully treated at sea level, as are cases of phthisis colorado. Then, again, patients suffering from diabetes or kidney complications would lead a more comfortable existence not only at a low altitude but in a comparatively mild temperature. Finally, we have the incipient cases with sound organs other than the slightly damaged lungs, who do well anywhere, but for whom, if possible, it is well to prescribe either a few months' sojourn in the mountains of a cold region, or a long sea voyage.

In considering the present-day methods, it will be as well to mention the medicines intended for internal administration first, and then to enumerate and describe the plans of using the various form of light, electricity, water, serum, intravenous and subcutaneous injections, inhalations, etc. Although there have been recommended a large number of drugs for internal administration, few of them have stood the test of time and given sufficiently good results to warrant continuing their use. Even within the past decade more than forty or fifty different remedies have been used and exploited by the profession, and yet to-day there are scarcely a dozen that are even considered seriously. As far as we know, no drug has the slightest specific action in pulmonary tuberculosis. The usefulness of drugs is, therefore, restricted to symptomatic treatment. Tonics are required in all incipient cases at first, and from time to time in chronic cases of fibroid phthisis. Their name is legion, but only a few have earned a standing in the treatment of this disease. Strychnine still justly heads the list and may be administered advantageously for many months, combined at times with the bitter tonics. Antiseptics are still, and probably will always be, used extensively. Creosote, ichthyol, and cloves seem to have given the best results among the many advocated at various times. Of all the pharmaceutical modifications of creosote, I believe that none has had as strong a hold upon the professional favor as carbonate of guaiacol—eosote, geosote, creosotal and their various fellows having gradually been relegated to the use of a few. In fact, a large number of the profession still consider, and justly so, that Merck's creosote, given in emulsion or in bismuth capsules, is more efficacious than any of its derivatives. Observers are divided in opinion as to the proper dosage of creosote, but probably the majority of those of qualified judgment agree that the minimum dose of fifteen minims and the maximum of thirty-five minims, three times a day, is a safe limit. Creosote, in addition to its antiseptic qualities, is recognized as a more or less stimulant to nutrition. It seems wise to administer it at intervals rather than constantly.

Ichthyol was first exploited as a rival of creosote in Europe, and there its reputation has remained unshaken for a number of years. The best results are obtained from the administration of large doses, and if the drug is given in such form as to pass the stomach undissolved, amounts of thirty grains three times a day, are easily borne, and untoward effects are few. An occasional diarrhea or an attack of vomiting, which is preceded by the taste of ichthyol, may occur. These symptoms quickly subside upon the withdrawal of the drug, and with its resumption the dose which caused the above symptoms can usually be given without further trouble. The improvement is rapid, and within one month, in individual cases, where other beneficial factors were eliminated, there was a gain in weight of eight or ten pounds, and in those patients whose weight had previously and under different surroundings remained stationary for long periods of time. There is improvement in general nutrition, as evidenced in females by return of menstruation. The fever, sweats and cough diminish, the sputum is more easily ejected, is smaller in quantity, and changed in character from greenish-yellow to yellow, finally becoming mucoid and frothy. In some instances expectoration is too

quickly reduced, and patients experience difficulty in raising the sputa. In cases far advanced, those having a cavity with excessive expectoration, when ichthyol acts well, the effect is striking, and it is more than suggestive of the important part played by the secondary infection in tuberculous processes. Ichthyol changes the character from the fetid, decomposed, purulent sputum into that which is mucoid and frothy, ameliorates the symptoms of fever, chills, sweats and general failure of nutrition dependent upon the absorption of pus products, so that it may be said that in such cases ichthyol practically accomplishes drainage, and, what is more important, tends to convert the function of the pyogenic membrane into one which secretes mucus instead of pus. The debilitating effect of pus absorption is put aside, and there is general improvement noted. Ichthyol is one of the few drugs that have earned a permanent standing in the treatment of phthisis. It may be administered in one of two ways: In enteric coated pills containing two or five grains each, or in the form of a glycerole composed of equal parts of crude ichthyol and glycerin, of which mixture the dose would be 3i (representing thirty minims of the drug) three times a day after meals.

Among other drugs used with more or less success and which have retained a permanent position in the armamentarium of the phthisiotherapeutist are kalagua, oil of cloves, and cinnamon. Oil of cloves is administered in doses of five to fifteen minims in capsules every one or two hours, to the point of saturation. It causes less gastric disturbances than would be expected and, in the hands of most observers, has yielded very excellent results in cases of chronic or fibroid phthisis. Cinnamon is administered in doses of five to twenty minims, three times a day, but has not given such favorable results as oil of cloves. Kalagua, a drug about which very little is known except that it is an extract of the leaves of a Japanese plant, is cultivated mostly in South America. Undoubted evidence of its beneficial effect in lupus has been presented from time to time, to the profession, and the form of pulmonary tuberculosis in which it is most useful is that involving small areas, usually subacute in character, but subject to more or less regular exacerbations of all the symptoms. The instant success of antitoxin in the treatment of diphtheria led some investigators to turn their attention to the manufacture of an antitoxin or serum that might act as quickly and as efficiently in antagonizing the tubercle bacillus. The discovery of this bacillus in 1882, by Robert Koch, was the basis upon which they founded their efforts. The first product of importance was given to the profession by Koch, and was a glycerin extract of cultures of tubercle bacilli. This product was received everywhere as a sure specific for pulmonary tuberculosis, though Koch claimed to cure only those cases treated in the incipient and early stages. Its use in all stages of the disease and in too large doses soon brought about a reaction, and tuberculin was practically abandoned as a therapeutic agent while still largely used as a diagnostic one.

The new and modified tuberculin R contains finely pulverized bodies of tubercle bacilli, sterilized by being kept for several hours at a temperature of 100° C. Those observers who favor tuberculin advocate its use only in selected cases, where the focus is small and restricted to a limited area, one apex only being involved; or, if both, then but in the slightest degree. The dose should be regulated by the degree of reactive temperature, and should not be repeated until at least twenty-four hours. A method favored by some is to begin injections of tuberculin R, and, when a tolerance has been established, to substitute old tuberculin.

Following tuberculin came a serum obtained from the horse, this animal being selected as the one most resistant to attacks of the tubercle bacillus. This serum, which is manufactured by the United States Government, is prepared in a manner similar to that followed in obtaining the antitoxin of diphtheria. The idea was to find an immunizing serum, which would prevent a further development of bacilli or tubercles within the pulmonary tract. The process is to immunize a horse by injecting increasing doses of tuberculin or a similar product for several months or a year, after which time the blood is drawn, the clot allowed to settle, and the resulting serum is styled "antitubercle serum." This product, like tuberculin, has produced the best results in the incipient and early stages. The writer has reported 36 incipient cases treated, with 39 per cent. apparently cured, 55 per cent. generally improved, 9 per cent. of which were practically arrested cases. In 42 moderately advanced cases treated in like manner, the bacilli decreased in 30 per cent., weight gained in 61 per cent., and in between 71 per cent. and 85 per cent. a marked improvement of all the other symptoms was shown.

(To be Continued.)

NORMAL LABOR CONSIDERED FROM A SURGICAL STANDPOINT.*

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THERE is no case of common occurrence, that presents itself to the general practitioner of medicine, which requires all the demands made in a technical surgical procedure, as in an obstetrical case. It matters not how simple the case may be; if your labors are to be rewarded by anything like uniform success, there is required in each and every instance, a thorough knowledge of a perfect surgical technic. In surgical practice, success does not depend so much upon the skill and dexterity of the operator, as upon his ability to prepare his case and the degree to which he is able to make and retain surgical cleanliness.

The object aimed at in all surgery is to pre-

* Read before the Iowa State Medical Society.

vent infection, for it is an apparent fact, that no matter how skilfully a serious operation be made, success depends wholly upon the aseptic manner in which it is conducted, else we would hear the joust, "the operation was a success, but the patient died," but they forget to add, "from infection." This fling of satire could be aptly applied a few years ago, but to-day it reflects discredit, if not criminal neglect. Our labors then in obstetrics should be directed with a view to prevent infection; and this can be successfully accomplished.

When we recall the condition of the uterus immediately after delivery, with its vast bleeding surface, its large area of torn tissue, the gaping, thrombosed placental sinuses, we are at once struck with its similarity to a wound located elsewhere from whatever cause; and the frequently occurring lacerations of the cervix and perineum, when they are present, serve to make the analogy closer. And when we consider the mechanism by which the decidua is normally removed, we readily observe that a choice culture medium is prepared by nature for the reception and propagation of organisms introduced from without.

The later pathological investigations show that the diseased processes affecting surgical wounds and the puerperal genital tract are precisely similar, differing only in a slight degree by the peculiar conditions in each case. Thus we understand that puerperal fever is really puerperal septicemia, and is due to the entrance into the lacerated tract of certain bacteria which are known to have definite pathogenic properties, and right in this connection it might be pertinent to ask, how do these bacteria gain entrance? Are any of them found normally in the genital tract? Does infection always occur from the outside? Can this be prevented in every case?

Formerly it was supposed that the vagina fairly teemed with bacteria, and the theory of auto-infection was advanced, but the later investigations carried on by competent and careful observers show conclusively that the uterus is positively free from pathogenic bacteria, and in a state of health the vagina is equally so. This premise, then, meets the first argument of auto-infection. The studies of Döderlein are conclusive and must carry weight. He found existing in the vagina an anaerobic bacillus which secretes lactic acid, which is antagonistic to staphylococci, and within certain limits destroys them. He infected the vagina of a virgin with large amounts of staphylococcus cultures, and in four days found it free of injected germs. From his investigations, he formulated the following deductions: (1) All pathological secretions containing germs are weakly acid or alkaline. (2) In puerperal women the vaginal bacillus disappears and in its place are found many forms of saprophytes, and the lochial discharge becomes alkaline. (3) When the lochia ceases, the saprophytes disappear, and the vaginal bacillus reappears; the vaginal secretion becoming intensely acid.

Dr. J. Whitredge Williams supports Döderlein's deductions, after continued observation and a study of other investigators. Kronig made two hundred examinations of vaginal secretions, and failed to find pathogenic microorganisms. He attributes the sterility of the vagina to the outward flow of the vaginal secretions. Menge thinks the germicidal action is aided by the anatomical elements of the vagina, and holds that there is a marked leucocytosis due to the irritation of the vaginal wall, and that this is followed by subsequent phagocytosis.

Having sufficiently considered the uterus and vagina, let us inquire into the state of the vulva. Dr. J. Clifton Edgar, of New York, gives us a careful bacteriological study of this region by a series of results found in examining the vulva of pregnant women; of thirty cases examined, he found the staphylococcus eight times; *Staphylococcus aureus* three times; streptococcus once; sterile nineteen; *Bacillus coli communis* none.

This table shows presence of pyogenic bacteria in about 40 per cent. of the cases he examined. This report is very valuable to us, since it gives a clue concerning the location of the infective agents. This has been used in support of the auto-infection theory, but can scarcely be given much importance in that relation, when we consider the fact that the vagina is the only route from the vulva to the uterus. We have also found that the vagina has certain bactericidal powers in health; but we have also seen in the foregoing that in the puerperal state the secretions of the vagina become alkaline, and as the sterility of the canal is dependent upon the acidity of the contents, we find that instead of there being any defense for the culture of pathogenic bacteria, it has become a perfect culture medium for them. Dr. Matthew D. Mann, of Buffalo, ascribes the alkalinity of the secretions after labor to the large amount of blood serum which is poured out, and to the absence of the *Bacillus vaginæ*, which seems to be destroyed after labor.

As another argument against the theory of auto-infection, we might mention the results of douching before and after labor. It would certainly seem that if the vagina contained pyogenic bacteria antiseptic solution of proper strength, would give better results than where the douche is omitted. Just the opposite of this, however, is true as shown by the labors of Leopold. He used the douche faithfully and well in 5,784 cases, and in $17^{6}/_{10}$ per cent. of this number there developed an infection. In another series of cases he confined 4,088 women and without the douche at an time during the puerperium and had infection in but $7^{8}/_{10}$ per cent., or a decrease of nearly 10 per cent. Undoubtedly the greatest argument in this matter is the results obtained by several large hospitals in this country, where great care is given to the patient and surgical cleanliness is thoroughly maintained, and in my opinion these reports conclusively prove the fallibility of the auto-infection theory, because if such a thing as

auto-infection were possible, then these results would be impossible, since a certain proportion of these cases would be infected, notwithstanding the greatest care. Following is the list: Sloan Maternity, no mortality from sepsis since its foundation. New York Maternity, 1,321 cases; no mortality from sepsis. New York Post-Graduate, 850 cases; 1 death from sepsis. New York Polyclinic, 450 cases; no deaths from sepsis. Preston Retreat, 480 cases; no deaths from sepsis. Boston Lying-in Hospital, 2,194 cases; 1 death from sepsis. University Hospital, Philadelphia; no deaths from sepsis in nine years.

The foregoing certainly reflects great credit on these institutions. Especially is the work commendable in those hospitals wherein there has occurred a death from sepsis, and the case was successfully isolated and was not communicated to other patients. This speaks volumes for their aseptic preparation, for it is generally accepted that sepsis is contagious by inoculation, and only rigid preparation can prevent it.

In 1847 Ignatius P. Semmelweis, at that time an assistant in the Lying-in department of the Vienna General Hospital, endeavored to find the cause of the high mortality rate that existed in his service. He was not slow to discover that this high rate was greatest in the Students' Clinic. These men were constantly engaged in dissecting, and at the same time pursued their studies in the Maternity wards, without any special cleansing of their hands. At this time nearly 10 per cent. of all the women confined in this branch of the service died from infection. In the Midwives Clinic the mortality was but about three per cent. Prolonged or complicated labor in the Students' Clinic was invariably fatal, while in the Midwives Clinic, the length of time or the occurrence of complications did not materially increase the death rate. He also noticed that women who had been delivered before admission and even when unattended, escaped infection. About this time one of the professors died from an infection received during dissection, and the symptoms presented by his associate were so similar to those who were dying in his service that he thought it was more than a mere coincidence, and sought the cause. He began by requesting the students to thoroughly wash their hands in chlorine water, and restricting the number of vaginal examinations. This action was promptly followed by a rapid decrease in the mortality rate, and in a very short time the death rate of that service was less than two per cent.

Thus it was that Dr. Semmelweis gave the world the pioneer work in modern obstetric asepsis and antisepsis, although he did not give it this name. His work has been faithfully carried out and enlarged by such men as Holmes, Lister, Tait, Döderlein, Williams, Edgar, and others familiar to all present.

The work done by the earlier men in this line was not well received. The entire profession hooted at the idea advanced by Semmelweis. He was made a target of ridicule and malignant opposition, and, being a sensitive soul, fretted himself insane. He could not stand the criticism advanced after, when he had such ample proof of its authenticity, and curiously enough, he died of an infected wound received during a septic operation, just in time, however, to prevent the humiliation of being committed to an insane asylum.

The honor of advancing these ideas in America belongs largely to Dr. Oliver Wendell Holmes. In 1843 he wrote an article in which he states that "child-bed fever is a contagious affection, and is preventable and owes its origin to either the attendant or nurse." These views were not accepted, and exerted very little, if any influence, at the time. They were rigidly opposed by the eminent men of the times, especially by Meigs and Hodge, of Philadelphia; Meigs declaring that he preferred to believe that puerperal infection was due to the workings of a Providence, which he could understand. It is strange that both Semmelweis and Holmes experienced the same opposition, when each had labored so faithfully and well to serve mankind by robbing it of one of the greatest horrors assailing that sacred state of motherhood. At the meeting where Holmes read his second article, the discussion brought out a torrent of abuse and ridicule and, headed as it was by such men as Hodge and Meigs, it can be readily understood how men of lesser degree ventured opinions furthering the abuse, since they considered the leaders of the discussion paragons of medical learning. The condition then was very much as it is to-day; each man has a certain following. Holmes' reply to them will always be considered a classic, and I feel that I can well afford to take time here to quote it to you. Addressing the Chairman, he said: "I have no wish to express any harsh feeling with regard to the painful subject which has come before us. If there are any so far excited by the story that these dreadful events that they ask for some word of indignant remonstrance to show that science does not turn the hearts of its followers into ice or stone, let me remind them that such words have been uttered by those who speak with an authority I could not claim. It is as a lesson rather than a reproach that I call up the memory of these irreparable errors and wrongs.

"No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened to a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into strangers' arms, or bequeathed with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the street has pity on her sister in degradation, when the seal of promised maternity is

impressed upon her. The remorseless vengeance of the law brought down upon its victim by a machinery as certain as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiple trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful time, should hazard it negligently, unadvisedly or selfishly."

Passing now from the discussion of auto-infection, we will briefly consider the forms and the source and character of the pyogenic bacteria introduced from the outside.

By far the commonest source of infection is produced by the saprophytes. These are organisms developed on decaying matter. They abound in the feces of parturient women, and find culture material in the blood clots, bits of placenta and membranes. They cannot be said to be truly septic in their action; theirs is rather a rôle of decomposition, as they do not at any time enter the circulation, but produce certain toxins, which in turn give rise to certain symptoms. They are mostly of an anaerobic nature, and cannot be cultivated on the ordinary culture media, and no doubt consists of many forms, which as yet have not been identified; hence, the term saprophytes is a general one, and does not signify any certain forms of bacillus.

Their action on the uterus and vagina is equally vague and obscure; many of them are gas producers, and give rise to the frothy and foul-smelling secretion present in these cases. We can well understand how thoroughly Semmelweis conducted his labors in this direction by reviewing an article published by him just before his death, in which he states:

"The bearer of the decomposed animal-organic material is the examining finger, the operating hand, instruments, foul bed-clothes, impure air, sponges, etc. In other words the bearer of the decomposed animal organic material is anything which is soiled by a decomposing animal-organic material and afterward comes in contact with the genitals of these patients."

While these saprophytes then are local in their action, the state of lowered resistance, induced by their presence, makes it a most favorable condition to be followed by a true septic infection, and while the condition of sapremia may be easily controlled, if a true septic condition should develop, then it would become a grave state indeed.

The true pyogenic organisms that cause infection may be briefly summed up as follows: Streptococcus, the usual cause of the fatal and epidemic form, produces no evidences of decomposition, the discharges are much lessened in amount or entirely absent and free from odor, reproduces itself very rapidly, and extends along the lymphatic routes, gains entrance into the peritoneum and gives rise to symptoms of general sepsis. Staphylococcus is usually associated with the streptococcus, thus giving us a mixed infection. The *Staphylococcus aureus* is the usual form observed in the infection of this condition, while the *Staphylococcus albus* and *Staphylococcus citreus* play little or no part in its production. However, it may be well to state in this connection, as Williams has pointed out, that while the streptococci are usually the causative agents in puerperal infection, they are not necessarily the only organisms concerned in its production, it being clearly shown that most of the pus-producing organisms found in wound infection may also be found in puerperal infection. Gonococcus causes a mild infection when found alone and unmixed. Krönig was able to cultivate gonococcus in 50 out of 179 cases, presenting a mild febrile course. None of these cases resulted in death. *Bacillus coli communis* is mild in its action in this location. Vignal states that one decigram of feces contains about twenty million of colon bacilli, and when we consider the close proximity of the parturient canal to the rectum, sometimes bulging by the pressure of the head downward, and the practice of some men to assist the delivery by passing a finger or two into the rectum to make pressure, we can readily understand how obstetrical asepsis can be compromised.

The foregoing are the commonest forms and I will not weary you by a recital of the other bacillus found, further than to merely mention them: Klebs-Löffler, pneumococcus, *Bacillus aerogenes capsulatus* or gas bacillus, and *Bacillus typhosus.*

Thus we have found in the foregoing that the uterus after labor presents exactly the same condition as a surgical wound; that the diseased processes affecting surgical wounds and the puerperal tract are identical; that the uterus and the vagina in the pregnant state are sterile and possess certain bactericidal powers; that the vulva lodges pyogenic organisms; that the vagina with its outward flow acts as a barrier to the introduction of these organisms into the uterus; that these organisms, then, are introduced into the tract from the outside; that any decomposed animal-organic material should be rigidly excluded.

Therefore, we are now ready to take up the study of how these morbid conditions can be prevented, as the consensus of opinion among the men giving this subject the greatest thought, lead us to believe.

If there is anything which the preceding study proves beyond the question of doubt, I certainly believe it is this: In the point of technic, the practice of obstetrics is a surgical procedure. The time to save your patient's life is when you are preparing her for, and during confinement, not after the infection has taken place, for then your efforts will only too often be rewarded by failure and we will hear the refrain of the mournful note sounded by Dr. Holmes in that memorable reply to his cruel critics.

In beginning this crusade against infection, one of the most important necessities is the educa-

tion of the patients to secure their attendant some little time before confinement, in order that the room and the other essential matters of preparation may be attended to in ample time, thus eliminating the danger by hurried preparation.

The room, if one can make a selection, should be light and capable of being freely ventilated, and the bed placed so that this may be accomplished without subjecting the patient to exposure to drafts.

Do not shut out the sunshine. Sunshine is God-given and is valuable. Lots of it, however, goes to waste for the lack of proper appreciation. Sunshine in itself is a bactericide of no mean potency, besides it adds much to the cheerfulness of the lying-in chamber. Arrange the windows so that the direct rays are not in the eyes of either mother or child, but by no means exclude it altogether.

The furniture should be simple and plain; the bed should be arranged so that the attendant can approach the patient from either side; the bed linen should be fresh and clean and a simple hard mattress answers the purpose of confinement best. No feather-bed should be tolerated, as they are animal-organic material, besides being unsanitary.

When the engagement is made sometime previous to the expected time, have the patient secure about two yards of white table oil-cloth; this is to be carbolized at the time of labor, and a blanket or quilt rolled tightly from end to end and pinned in the shape of a horse-shoe and placed transverse the bed, the oil-cloth laid over it, arranging the depression in the quilt so that the hips may rest therein. This will place one of the edges of the folded quilt under the back and prove a very grateful support to the tired back. The other edge of the roll is far enough from the vaginal outlet so as not to interfere with the delivery of the child. The loose ends of the oil-cloth are then gathered into a suitable vessel at the edge of the bed. Thus we have an arrangement that is capable of being made more aseptic than a Kelly or a Morrison pad, and at the same time eliminates the grave danger of carrying infection from one case to another, and another great recommendation is the small expense.

It is well also to instruct the family to have four towels securely wrapped in unbleached muslin, and thoroughly baked in the oven of an ordinary cook-stove for about an hour, then laid away for use during the confinement. This process quite effectively sterilizes them, and wrapped as they are, they will remain so until needed. A couple of washbowls will be required, but in the emergency two ordinary basins will answer the purpose, providing they are clean.

The patient is prepared, when possible, by a thorough bath, rectal enema and catheterization; where it is impossible to attend to the bath, by no means neglect emptying the bladder and especially the rectum, for, should involuntary evacuation of the bowel take place by reason of the pressure exerted by the descending head, the previous preparation counts for nothing, and extreme care will be required to prevent an ensuing sapremia, due to the action of the colon bacillus, hence it is altogether safer to attend to this matter deliberately than to be compelled to meet it in emergency.

The woman should be attired in a fresh clean nightrobe, and this can be rolled or folded up in under her arms, and an old but clean skirt snugly pinned about the patient just above the waist line. Thus after delivery, by the removal of the soiled skirt and our improvised confinement pad, we have our patient in a clean bed, with clean clothing without disturbing the peaceful rest so highly prized after a long and tedious painful labor.

The attendant should be gowned in a white sterile gown which answers the double purpose of preventing his clothing from being soiled, as well as protecting the patient from a possible infection from dust and other material that could arise from contact. It also adds much to the aseptic completeness of his work. I will mention the preliminary vaginal douche, only to condemn it. The studies of Leopold and others so conclusively prove that it is a dangerous procedure, and is only permissible, where, after a bacteriological examination of the vaginal contents or the secretion, is found to contain pyogenic organisms, and right in this connection let us consider the vaginal examination. Just so long as vaginal examinations are made, no matter how carefully we attempted to disinfect our hands, or the vulva, infection will occasionally be met; this is due to the fact that it is a very difficult matter to thoroughly sterilize the hands, together with the fact that the vulva not infrequently harbors pyogenic organisms. It is to be desired, therefore, that we limit the number of vaginal examinations as much as possible. Little is to be gained from the vaginal examination except to determine the degree of dilatation of the cervix, and thus to make an estimate on the probable duration of labor. Leopold has advanced the idea that labor is best conducted by doing away with the vaginal examination altogether, and relying wholly on the external examination, claiming that the position can be determined with greater accuracy than by the vaginal route, and thus eliminating the grave danger of infection by either the finger, or contamination from the vulva. One of the very first precautions taken by Semmelweis, we remember, was to lessen the number of vaginal examinations. The average accoucheur makes altogether too many of the examinations, and I have known men to sit with their finger in the vagina during almost the entire second stage of labor, believing that they materially assist in dilating the cervix; perhaps they do, but the danger they take by infection greatly overbalances the good that they believe they are doing. The external examination has much to commend it. It is perfectly harmless, and can be made as often as desired, and, unlike

vaginal examination, requires no hand disinfection.

There is a great diversity of opinion as to the best methods of hand sterilization. Some men even go so far as to state that the use of antiseptic solutions are of no value whatever. In a very interesting paper on this subject, Dr. Edward R. McGuire, of Buffalo, has given some very practical suggestions regarding the disinfection of the hands, and has faithfully carried out some very convincing experiments. He closes his article by summarizing as follows: (1) Absolute sterility is impossible by any method. (2) Long-continued vigorous mechanical scrubbing frees the skin of the larger numbers of bacilli. (3) The use of the ordinary solutions for antisepsis is questionable, and under usual conditions distinctly harmful. (4) The use of rubber gloves approaches the ideal. Dr. Wm. J. Mayo, of Rochester, Minn., declares that by scrubbing the hands, we destroy the natural protection that has been provided for harboring of the bacilli, and thus make them more in evidence. He advises and uses the mere thorough washing of the hands in a lather of castile soap and does not touch a brush to the surface. Dr. Joseph Price, of Philadelphia, some time ago suggested the use of ordinary mustard flour, used with green soap rubbed into a paste. The water frees the valatile oil of mustard, which is known to be the most effective vegetable antiseptic known. Dr. Roswell Park has added to this the ordinary corn-meal, previously sterilized. This acts as a mechanical aid to the mustard paste and gives it unsurpassed utility, since it is not severe enough to destroy the outer layer of the skin which protects the resident bacilli.

Personally I prefer this to any other method. It does not leave the surface of the skin rough, it is usually found in all households, and it is efficient in obstetrical work. However, it is well to substitute some of the liquid preparations of soap for the green soap. When you carry your soap in a bottle, you cannot get your hands into it to infect it. This cannot be said of the other forms.

Before preceding with the vaginal examination, then, prepare your hands in the manner best suited to your own ideas, since there is no positive means of securing sterility. In emergency of precipitate labor simple washing in ordinary yellow kitchen soap with plenty of hot water is far better than no preparation at all. The vulva should be thoroughly cleansed by the nurse while the attendant is preparing himself. This should be done with every care, remembering that it is the material that is carried in from the outside that produces the unfortunate complications, and the best and easiest way out of the difficulty is to prevent their occurrence. After the hands and vulva are cleansed, I use a gauze pad, with a slit in the center, to protect the vulva while the finger enters the vagina. These pads are made of four thicknesses of gauze, about eight inches square, and are wrapped in packages of eight and sterilized, then carried in my obstetric bag for use. The nurse places one of these bags snugly in the vulva, and the examination is made through the slit in the center. In this way the parturient canal is protected from the usual source of infection so far as the mother is concerned.

After delivery the placenta should be expressed, there being no occasions to introduce the fingers again into the vulva or vagina, and as the route of expulsion is outward there is no danger of infection from that source, unless the hand or fingers are introduced, and this will not be necessary, unless there is an adherent placenta. In that event the entire arm to the elbow should be prepared thoroughly and the placenta removed.

The responsibility does not cease with the termination of labor. Every precaution should be taken to secure a tranquil puerperium. The napkins to receive the flow should be sterile, and clean cloths, which have been boiled and ironed are sufficiently sterilized to answer the purposes, as the flow is outward, and infection is not likely to occur. When it can be arranged it is best to have pads made of absorbent cotton enclosed in layers of gauze; these can be sterilized and after using, destroyed, as the expense is small and it is much more positive and adds to the surgical completeness of the after-treatment.

The care of the child is not less, in proportion, than that of the mother. There are certain responsibilities that will reward the attendant if well and aseptically performed, and the penalty for neglect is correspondingly simple or grave, as the case may be. Of course no obstetric attendant would neglect the eyes of the infant in this age, but there may be temptation to neglect the surgical technic regarding the cord, and grave complications follow neglect here, a case occurring in my own practice will illustrate the danger.

Charles Edgar, a full-term child, and delivered after a very brief labor, no instruments, eyes washed in weak sterile boric solution, and cord dressed with plain sterile gauze, when ten days old had a black movement of the bowels of the consistency of tar. Examination revealed pneumonia of both lungs, temperature 166° F., the umbilicus discharging and bleeding slightly. The umbilical depression was irrigated with a 1:2,000 solution of bichloride and dressed with iodoform gauze. The pneumonia treated with a cotton jacket and stimulation, and with lessening of the umbilical discharge the pneumonia subsided. This undoubtedly was a case of septic pneumonia; other phases of umbilical infection may be mentioned such as meningitis, inflammation of the umbilical vessels, peritonitis, osteomyelitis, arthritis, erysipelas and abscesses in the cellular tissue. Thus we see that pyogenic infection of the infant, like infection of the mother, is a preventable disease, and its presence is invariably due to some failure to execute the proper surgical technic in connection with the delivery. The statistics of the Moscow Lying-in Hospital, published by Miller in 1888, show that previous

to the introduction of aseptic and antiseptic methods, from six to eight per cent. of all the infants died from some of the many varieties of infection and that over eighty per cent. of these infections could be traced to the entrance through the umbilicus. Quite in contrast to these figures the Sloan Maternity Hospital, in New York, does not report a single marked case of infection of the infant since its establishment.

From this comparison it will be evident that in the vast majority of cases the occurrence of infection is due to the negligence of either nurse or attendant.

The umbilicus then should be treated like any other fresh wound, and with all the surgical care

The umbilicus, then, should be treated like any that would be given a surgical wound. Their similarity is striking, only differing as to the cause and location. Dry dressing should invariably be used, and this should be positively sterile. There should be no doubt of this and a simple manner of carrying sterile dressings for the cord is to keep a small jar of sterile gauze sponges in the obstetric bag and use them with sterile hands in making the umbilical dressings. Around this can should be wrapped absorbent cotton, but the practice of wrapping absorbent cotton direct from the commercial package is dangerous, and infection following is due to criminal negligence. Should suppuration occur in spite of all precautions, the wound is irrigated with a solution of bichloride in the strength of from 1 :2,000 to 1 :3,000, then dusted with iodoform and packed with gauze; or, instead of dusting apply the iodoform in the form of gauze, but by no means use both, as the danger from iodoform poisoning is grave and children are peculiarly susceptible to this idiosyncrasy. The ligatures and everything that comes in contact with the abraided surface of the umbilical region should be thoroughly sterilized, and every precaution taken as in the dressing of a wound.

In closing, then, permit me to recapitulate, under the following heads:

1. Success in obstetrics depends wholly upon your ability to secure and retain surgical cleanliness.

2. The same infective agents encountered in surgical practice are the causative agents in producing puerperal complications, and are only successfully combated by the employment of stringent aseptic and antiseptic technic.

3. Refrain from making numerous vaginal examinations, and when done, execute great aseptic care.

4. Do not wait until you are called to the case to make the preparations for confinement.

5. The practice of carrying a confinement pad is dangerous.

6. Sunshine in itself is a valuable germicide; do not exclude it.

7. Unless the vaginal discharge is known to contain pyogenic bacteria the douche is contraindicated.

8. Exert the same surgical technic in dressing the umbilicus that would be demanded in any other fresh wound.

9. Be clean and be sure that you are clean. Take no chances. By so doing you will reap a liberal temporal reward, besides having the serene satisfaction of knowing that you are serving humanity faithfully and well.

RUBBER CUSHIONS FOR GENERAL SURGICAL, GYNECOLOGICAL AND OBSTETRIC USE.

BY HOWARD A. KELLY, M.D.,
OF BALTIMORE, MD.

It is now seventeen years since I first described my Perineal and Ovariotomy drainage cushions (see *American Journal Obstetrics*, 1887, p. 1029); the following year I added a cushion for general surgical purposes (*New York Medical Journal*, April 28, 1888), and again in 1892 (*New York Medical Record*, Dec. 3) I described the obstetric cushion. Since then these simple aids to our surgical technic have proven sufficiently valuable to come into world-wide use, constantly taking the place of specially constructed tables in extemporized operations, and obviating the necessity for attachments to the regular surgical tables by providing effective drainage from the wound area to the receptacle on the floor. They are of constant service in saving the patient's person from being soiled beyond the field of operation, as well as in protecting the under clothing and night dress, and shielding the beds and sheets from contamination.

The cushions in use up to the present date, while affording efficient drainage, have been open to the objection that they are difficult to clean in the narrow recess of the apron under the rounded rim. I sought to meet this difficulty about fifteen years ago by attaching the rubber apron at the middle of the rounded rim, so that the cushion could be used with either side up, and I then had a cushion made after this pattern by a well-known firm dealing in rubber goods in Philadelphia, but it did not prove satisfactory, as it was too shallow, and I abandoned it.

The lingering objection to the earliest styles of

Fig. 1.

SECTIONAL VIEW

drainage cushions has at last been obviated by Meinecke & Company, of New York, manufacturers of advanced specialties for hospitals, by constructing the inner surface of the inflated rim in the form of a vertical wall, which joins the floor of the cushion at a right angle, as indicated by the arrows in sectional cut (Fig. 1). In this

way, while all the depth of the original cushion is kept (and even slightly increased), no part is concealed from view, there is no crevice, and perfect cleanliness is possible.

Fig. 2.

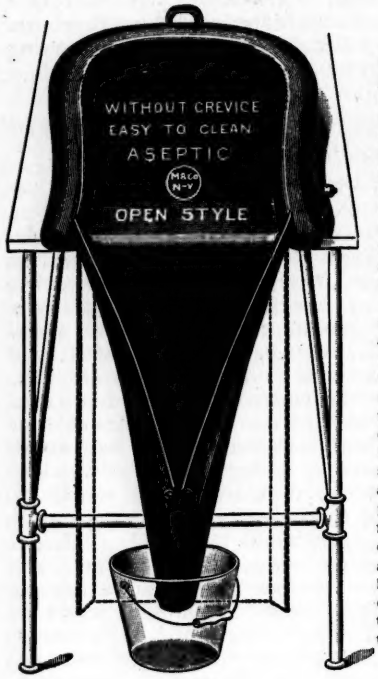

Illustration shows how drainage-apron may be hooked together, thus forming a closed outlet-sleeve. The drainage is thereby carried directly into the receptacle, instead of over the floor and on the operator's clothing.

The dotted lines show how drainage-apron hangs when not hooked together. Notice the gutter or protection, shown by dotted lines, which is formed on each side of the drainage-apron, thus preventing the fluid from running off the sides of apron when used hanging straight down, in the position shown by dotted lines.

Fig. 3.

Illustration shows how outlet sleeve may be hooked up, thus forming its own receptacle. This makes a drainage pail unnecessary in operations in which there are less than two quarts of fluid present.

Dotted lines show how outlet-sleeve may lead into drainage pail during operations where there are upward of two quarts of fluid present. The outlet-sleeve is *closed*, like the sleeve of a coat, thus carrying the drainage into the receptacle instead of over the floor and on the operator's clothing.

Showing how the outlet sleeve may be turned INSIDE OUT to be cleaned.

The small square cushion of this pattern, commonly called "perineal" size, is 15 inches wide; the standard operating size is 20 inches wide, and a large operating size is made 24 inches wide. The 20-inch size is the one most generally used (see Fig. 2).

The obstetric cushion is made with a reversible closed sleeve, which hooks up to the rim in such a manner as to catch amnion, blood and placenta, which collected in this pocket can be transported to the bathroom, weighed and inspected, without the use of any other vessel (see Fig. 3).

In using the cushions for gynecological and general surgery, it is best to lay a sterilized towel between the cushion and the patient. I would also use a sterilized towel or gauze in all obstetric cases. My own practice is to consume from one-half pound to one pound of sterilized absorbent cotton in each obstetric case, unrolling and tearing off a good handful of the cotton at a time, and stuffing it between the buttocks below the vulva. When a wad is saturated or soiled, I drop it into the receptacle formed by the apron and substitute another piece. In this way the patient is kept clean throughout. A proper use of the obstetric pad quite does away with the customary washwoman's tax (sometimes as much as $5.00 for a single wash), which she often levies for handling the soiled linen after the arrival of a baby.

I am in the habit of sterilizing my cushions by soaking them for twenty-four hours in a bichloride solution 1-1,000, or even 1-500. This has never seemed to hurt the rubber; the valve of course must be kept out. If there is much odor clinging to the rubber, Labarraque's solution will correct it.

MEDICAL PROGRESS.

MEDICINE.

The Blood in Pneumonia.—The contradictory results reported by investigators with regard to the finding of the pneumococcus in the blood of pneumonia patients led F. C. KINSEY (Jour. Am. Med. Ass'n, March 19, 1904) to make a new series of examinations. Fifty cases were examined, the blood being taken from one of the veins at the bend of the elbow under the most careful aseptic precautions. In answer to the question whether pneumococci could be found in the blood at any time, the cultural and other tests afford an affirmative answer. In one series of 25 cases, there were only three positives but in another series of 25, under more favorable conditions of growth, there were 19 cases with a positive result. It is possible that the negative results were due to unfavorable conditions of growth. The best results were secured with large quantities of blood (3 to 6 c.c.) with a dilution of over one to twelve of a liquid culture medium, preferably bouillon. He believes that the mere finding of the pneumococcus in the blood is of no prognostic importance whatever. Of the 19 positive cases in the second series, 69 per cent. recovered and 31 per cent. died, while of the negative cases, 33 per cent. recovered and 67 per cent. died. No worse prognosis seems to attach to a positive than to a negative finding. He found, however, that where the cocci were present in large numbers the prognosis was always grave.

Excretion of Oxalic Acid, etc., in Diabetes.—The amount of oxalic acid in the urine of diabetics is not regularly increased but W. v. MORACZEWSKI (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) obtained high figures more frequently than in other conditions. The influence of diet is somewhere different than normally for the addition of meat increases the amount in severe cases. With a strictly fatty diet and after the ingestion of calcium salts, oxalic acid, the conjugated sulphuric acids and indican are freely excreted but a distinct relation between oxalic acid and sugar is not always present. Both oxalic acid and acetone fall in amount after every change of diet, are influenced alike when phosphate of lime is given but after vegetable diet, the amount of oxalic acid, indican and conjugated sulphuric acid falls, while that of acetone rises. In all cases, the urine was rich in indican, and, after milk diet, in ammonia, especially after calcium. Urea and uric acid were found diminished and chlorides increased, especially after vegetable diet. There does not seem to be anything specific in the high amounts of oxalic acid, for the author has obtained equally high and even higher figures in hepatic disorders.

Proteids in the Urine of Nephritis.—A. CALVO (Deutsch. Arch. f. klin. Med., Vol. 51, Nos. 5 and 6) draws attention to the interesting fact that every albuminous urine will throw down a precipitate with acetic acid in the cold, if properly diluted. The amount varies and a large amount of albumin does not necessarily mean a heavy precipitate. The investigation of the character of this precipitate was a difficult task, but it probably consists of euglobulin and fibrinoglobulin in some cases and of serum albumin and pseudoglobulin in others. The occurrence and amount of serum albumin plays no constant rôle in the different forms of albuminuria but euglobulin and fibrinoglobulin are very abundant in febrile albuminuria and scarce in interstitial nephritis. The reverse holds true for pseudoglobulin: it is scant in febrile albuminuria and abundant in chronic nephritis. After dialyzing, every normal urine, free from albumin, will also give a precipitate with acetic acid in the cold, which consists chiefly of euglobulin and fibrinoglobulin.

The Problem of Glycolysis.—It is generally conceded that glycolysis is a specific fermentative process, but there is still considerable divergence of opinion as to whether the glycolytic ferment is performed in the cells and rendered active by a substance secreted by the pancreas or whether the ferment can only result by the combination of cellular with pancreatic elements. The experiments of A. BRAUNSTEIN (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) prove, however, that pancreas is not necessary to bring about a splitting up of sugar, for a rapid glycolysis was obscured if liver and coagulated blood were digested for some time with a sugar solution. The action of the ferment is very strong at first but is soon inhibited by the presence of carbon dioxide and acids The concentration of the sugar solution also seems to have an influence upon the rapidity of the process. The ferment is probably contained in the leucocytes; this would explain why a pneumonia or a suppurative cystitis will be followed by a reduction of diabetics.

Studies on Dysentery and Typhoid.—The bacteriology of dysentery is still a complicated one, especially since D. JÜRGENS (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) carefully studied an epidemic in a small town. By many the bacilli of Kruse, Schiga and Flexner are considered identical but the germ isolated from the stools of almost all cases by the author, while morphological and in culture it closely resembled the Kruse bacillus, agglutinated only the blood-serum of an animal treated with the Flexner germ, so that the two must be looked upon as different species. The culture medium of v. Drigalski-Conradi has proven especially valuable; upon it the dysentery bacillus forms blue, transparent colonies resembling those of typhoid, while the growth of most other germs, except the colon bacillus, is inhibited. The agglutination test is not absolutely conelusive since all the members of the dysentery group agglutinate each other to a greater or lesser extent but the text is generally positive in high dilutions only with the specific cause of the disease. Pfeiffer's phenomenon, that is, the disintegration of the bacilli, if introduced into the peritoneal cavity of a guinea-pig together with the serum of a patient, cannot be resorted to in dysentery as in typhoid. In the former disease, the specific agglutination appears during the first days of the disease, reaches high degrees by the second or third week (1-100 to 1,000) and gradually falls by the second month. But it seems that the serum of patients suffering from other diseases also has some agglutinating power, thus 1-30 was positive in six cases of pneumonia, scarlet fever, measles and sepsis and even 1-200 in typhoid. It is thus evident that only high dilutions possess diagnostic value. During the epidemic a large number of individuals also suffered from an apparently innocent intestinal catarrh which was caused by the same germ, since the blood-serum regularly agglutinated though not in as high a dilution as where the discharge was bloody. The individual reaction plays an important rôle and it is even possible for perfectly healthy individuals to discharge so large a number of pathogenic dysentery bacilli, that multiplication must have taken place in the intestines. Outside of the germ and the degree of personal resistance, a third unknown factor is active in keeping up and prolonging an epidemic, for if all the diseased and those about them are moved to some other locality, the epidemic frequently comes to a sudden stop. In a second article (Zeitsch. f. klin. Med., Vol. 52, Nos. 1 and 2) reference is made to the fact that even typhoid bacilli have been found in the excreta of healthy persons. The paratyphoid problem is also discussed and the confusion caused by the group agglutination makes it evident that a bacteriological examination of the feces must now supplement the Widal test. Cases of supposed mixed infection with typhoid and paratyphoid germs must be regarded with suspicion, for almost every paratyphoid serum will clump typhoid and allied germs in suitable dilution. Clinically, paratyphoid differs very little from true typhoid; like here, there are mild, severe and atypical cases and without a bacteriological examination, the differential diagnosis can never be made. The complications too, are the same, and in the few cases which have come to autopsy, typical typhoid ulcers were found in the intestines together with the other, characteristic lesions of tphoid. The germ also occurs in the blood and roseolæ of paratyphoid cases and occasionally in the feces of healthy individuals. The mode of infection is still in doubt and it is probable that other factors beside contact infection are at work, though the source is unknown. With our present knowledge, a diagnosis of paratyphoid is only admissible if this germ is found in the feces without the typhoid germ, if it agglutinates in high dilution with the respective serum and if Pfeiffer's experiment is positive. But with every epidemic, paratyphoid bacilli may occur in the stools of patients suffering from some other disease, such as influenza or tuberculosis, so that with even so thorough an examination, mistakes are possible.

Alcoholism and Degeneration.—Under the above title a valuable list of statistics is published by G. v.

BUNGE (Virchow's Archiv, Vol. 175, No. 2), which proves that alcohol really plays an enormous rôle in bringing about degeneration of the race. This is most clearly seen in the growing inability of mothers to nurse their offspring; thus, when mother and daughter of one family were not obliged to resort to artificial food, the father was a drunkard in only 2.6 per cent., while where both were unable to nurse, a history of excessive drinking was obtained in 42.2 per cent. All cases of functional derangement owing to imperfect condition of the nipples, were ruled out. The condition is hereditary, for if the mother has lost the power, it will never be regained in that particular degeneration. Other stigmata go hand in hand with deficient nursing capacity and a pronounced disposition, toward tuberculosis, nervous diseases and psychoses is very evident. The offspring of alcoholics also suffers more frequently from carious teeth.

OBSTETRICS AND GYNECOLOGY.

Supravaginal Amputation.—Statistics are worth something, and, although they are often juggled to suit individual preferences, they, nevertheless, represent a standard of work which must be a guide by which one must estimate the gravity and dangers of all operations. HERMAN E. HAYD (Am. Jour. of Obstet., Jan., 1904) cites the mortality of supravaginal amputation as 5.6 per cent., while that of total extirpation in the hands of more capable surgeons, is 9.6 per cent. The work of individuals, even with the serrenœud operation, is, of course, infinitely better than these figures indicate, but it would also be so if the supravaginal operation were done and the stump were dropped back into the peritoneal cavity. The suffering of the patients is less, the period of confinement is shorter, the dangers of subsequent hernias reduced to the minimum, and a more beautiful abdominal scar results, and less danger of subsequent adhesions of the bowel and viscera to the abdominal incision, with the future possibility of operation for strangulation and obstruction, and infinitely less wear and tear and labor for the operator, assistants and nurses. The writer believes that the supravaginal amputation for necessarily operable fibroids meets nearly every indication demanded of the abdominal surgeon, and can be applied, and has been applied, to every conceivable kind of tumors, with short pedicle or long pedicle, tumors growing deep into the pelvis, or out into the broad ligaments; and with results which make it a clean and ideal piece of surgery, and is the operation of choice, excepting in those cases where drainage must be provided for, or where the cervix for various other reasons should be removed. The author has had one death in fourteen cases operated upon by the method instituted by Baer and modified occasionally after the suggestions of Kelly and other more recent operators, when some special indication seemed to exist for their employment.

Ischuria in Retroflexion of the Gravid Uterus.—In looking over the literature it is noticeable that a great many explanations are put forward to account for urinary retention in cases of backward displacements of the pregnant uterus, says CHAS. B. REED (Am. Jour. of Obstet., Feb., 1904). In this fact lies sufficient evidence that none of them entirely meets the anatomical or physiological conditions. In one case it is assumed that the presence of the displaced cervix results in a definite anatomical change in the bladder—the formation of a valve-like fold, spur or tongue on the posterior wall, which is so developed that the catheter meets with no opposition, while the outflow of urine is effectually prevented by the action of the valve (Zweifel). In looking over the various factors and possibilities it is possible to summarize as follows: (1) Retention of urine in retroflexioversion is not due to direct compression of the urethra, or neck of the bladder whereby the lumen is mechanically closed. (2) It must be regarded as a form of "pressure paralysis" due to interference with the nerves supplying the bladder in some part of their course. (3) Compression of the principal motor nerve (pelvic nerve) is the most common source of retention. The part most subject to pressure is the pelvic ganglion lying near the great cervical ganglion of the uterus, although the nerve may be affected in any other part of its course, either near its distribution to the bladder, or close to the sacral exit of the component fibers. (4) Compression of the sensory nerves, either in the course of the nerve, or peripherally (in the bladder) may also rarely produce retention. (5) Both afferent and efferent filaments may be affected simultaneously in a given case of retention, but the order is usually consecutive. (6) Pathological conditions of the pelvis and abdomen, which irritate the sensory fibers of the bladder, produce the so-called "irritable bladder." (7) Retention of urine post partum and after laparotomies for tumors is due to intra-abdominal pressure, weakness of the abdominal muscles from overdistention and the dorsal decubitus.

Inversio Uteri of Puerperal Origin.—This condition is so rare, occurring as it does once in 190,000 deliveries, that EDG. SNYERS (Gaz. de Gyn., Feb. 1, 1904) thinks that it is worth while to report the following case: The patient, a primipara aged thirty years, had been in labor about twelve hours, and although the cervix was fully dilated and the head in the right occipito-anterior position, forceps were applied because the uterine pains had become ineffectual. Delivery was accomplished very readily and without any difficulty. A single voluntary movement to expel the placenta by the woman, caused a complete uterine inversion. In spite of every effort on the part of the acchoucheur, it was not possible to replace the uterus behind the pubis. The hemorrhage was so profuse that the operator was forced to desist and take the necessary precaution to check the hemorrhage and to administer champagne, caffeine and normal salt solution to overçome the threatening collapse. The uterus was packed with antiseptic gauze after the placenta had been thoroughly peeled off. The child was strong and healthy. On the following day renewed attempts were made to reduce the inversion, but in vain. Sixteen days later the patient developed phlegmasia alba dolens. The question of operation presented itself, but as the woman was very anemic and her general condition so bad that it was thought best to postpone this procedure until she could become stronger, care being taken to keep the uterus as aseptic as possible. In spite of all precautions the lochia became infected and the woman developed a septicemia. Finally vaginal hysterectomy was performed in order to save the patient's life.

Suprarenal Producing Lesions of Atheroma.—Atheroma is generally considered a chronic lesion of the inner lining of the blood-vessels caused by slow intoxication. To this toxic element certain authors add another fact which is general and local hypertension. JOSUÈ (Gaz. degli ospedali, Feb. 23, 1904) has caused atheromatous lesions of the aorta in a rabbit by injecting for several months, every other day, three drops of 1-1,000 solution of adrenalin into a vein of the ear. The alterations thus produced are considered to offer a typical appearance of calcified atheroma. In one case an atheromatous plaque was distended, constituting a fusiform aneurism, such as may frequently be seen in atheromatous individuals.

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BLOOD PRESSURE IN SURGICAL CASES.

IN February of 1903, the Committee on Surgical Research of the Division of Surgery of the Harvard Medical School undertook to determine, "as far as the opportunities in this country will allow," the extent to which blood-pressure observations in surgical cases may be of value from a clinical point of view. The Committee was instigated to this desire by the very suggestive and original work of Crile and by the recent researches of Harvey Cushing. The end in view was to be attained by the cooperation of the surgeons of the Massachusetts General Hospital, the Boston City Hospital, and the Children's Hospital in Boston.

The results so obtained were then to be collated and digested by the Committee, with the aid of the Department of Physiology, in order that a "rigid criticism might be brought to bear upon these investigations from a scientific point of view." Such was the inception of a work, the bearing of which must appear of the greatest importance, both from a diagnostic and from a therapeutic surgical standpoint.

A year has elapsed, during which Drs. Faulkner, Stone, and Murphy, of the three hospitals above mentioned, have been busied with investigations bearing upon the problem set by the Harvard Research Committee. They have presented their detailed reports, which, together with the critique and the comment of the Committee, are embodied in the *Boston Medical and Surgical Journal* of March 10. In judging of this final statement, it is well to review the conditions which have governed the joint research, in order that one may maintain the proper attitude toward the conclusions. It would be unfair, for example, to compare the undertaking with that of the famous Hyderabad Commission on the action of anesthetics, inasmuch as the latter was composed of the most eminent specialists in England, empowered by the aid of an ample research fund to maintain a series of long and difficult experiments.

The contributions of the Boston surgeons cannot be said to have the authority of specialists in this particular field of research, nor were they enabled to make any observations other than such as are possible in the surgical wards of any large hospital. On the other hand, the volume of their combined observations, together with the fact that individual bias and interpretation have been very largely eliminated by the method of a joint report, invests their conclusions with a high degree of authority and importance.

The instruments made use of by the different surgeons were of one type, namely, the Riva-Rocci sphygmomanometer, as employed by Dr. Cushing. It is now generally recognized that this instrument affords the most perfect mechanism for the clinical registration of blood pressure, far superior, certainly, to the earlier German instruments, notably that of v. Basch. The width of the armlet is a factor of considerable importance, to which the Committee has devoted some attention. It appears that the use of a 10 cm. armlet gives readings which are far more constant and more nearly independent of the influence of the soft parts than in case of a 5 cm. band. Armlets wider than 10 cm. are more cumbersome and possess no especial advantage. The exact relation borne by the readings of the manometer in this instrument with the true intravascular pressure are, however, still largely a matter of theory. Its use has not, as yet, been controlled by a series of actual arterial manometric tracings in man, and, as the Committee remarks, the different conditions in animals are not such as to ensure accurate results. Its records, therefore, possess an empirical value which is directly proportional to the volume and the accuracy of the conjoined clinical observations.

A prerequisite to the correct interpretation of the readings is a study of the normal, the physiological, and the accidental variations. In normal individuals the mercury ordinarily registers 120 to 160 mm., but may fall as low as 100, or may reach 200. Change of position, and psychic and emotional influences produce considerable variations. Age is of importance, inasmuch as the normal readings are very much lower in children. Chronic conditions, such as tuberculosis, or such special factors as nephritis and arteriosclerosis, play a very marked rôle in the final result. All these elements must, therefore, be carefully gauged in the appreciation of any reading.

Such are the general principles which must be accepted as guiding and controlling all special research on blood pressure. Unfortunately, the *positive* outcome of its work halts with this preliminary; what should come later is lacking. It does not appear that the blood pressure affords a guide of any considerable value in determining the condition of a patient either before, during or after operation, as compared with the importance of the other ascertainable physical symptoms. The blood pressure observations "serve, as a rule, only to confirm a diagnosis already made by the physical examination of the patient;" indeed, the latter affords a far more accurate gauge of the condition, and is, at once, far more easily carried out. It appears that only in cases of cerebral compression, and then only with the utmost caution, can the blood pressure be regarded as an important element in diagnosis.

The conclusions of the Commission, disappointing as they may seem when compared with the prejudices and anticipations of the medical world on the subject of blood pressure, are to be accepted for the time being, at least, as authoritative. Nevertheless, it is quite certain that the last word has not yet been spoken upon blood pressure, and its bearing on surgical operations. The crux of the matter would appear to lie in the fact that the blood pressure is not at one time identical in all the various vessels of the body. It may be high in the extremities and low in the splanchnic area, a condition which of itself would tend to overfill the latter system, and so, by a process of "bleeding the patient into his own vessels," prove the very cause of shock. Such, perhaps, was the condition in those cases recorded by the Commission, in which "the evidence, as obtained from blood pressure observations, appeared even to be misleading." Postulated this condition, it is evident that a high peripheral pressure becomes a prognostic omen of ill import, and calls for reduction, while the splanchnic vasomotors are to be simultaneously stimulated. Be this as it may, it is certain that the matter of blood pressure is quite too complicated to be settled by the Riva-Rocci alone, and that further investigations and other means will have to be invoked before its full significance is understood or appreciated.

PATHOLOGY AND SURGERY OF THE PANCREAS.

A. W. MAYO ROBSON has recently delivered a series of lectures on certain diseases of the pancreas which are full of charm and instruction. Failing the privilege of hearing them, every practitioner of medicine should heed what this most brilliant English investigator has to say on this little known topic.

It is a matter of pride to Americans that he should introduce these Hunterian lectures (*British Medical Journal—Lancet,* March 19, 26, *et seq.*) by referring to the work of an American. He quotes fully and gives diagrams from Opie's monograph, which, as is well known, discussed the relations of the ducts of Wirsung and of Santorini, and the bearing which these varying anatomical structures have to the etiology of pancreatic disease.

It cannot be expected that the general practitioner should follow in detail such intricate considerations as those presented in this contribution of Robson's. The chief matter of interest and of importance centers in what he has to say concerning the symptomatology of the diseased pancreas. His profound researches have carried him to the point where he frankly states that the diagnosis of pancreatic disease is far from easy, yet he gives us a classification which can safely be used for a basis of treatment. Robson groups the symptoms and pathology, because, as he well says, they are in this organ peculiarly inseparable.

The variations from the normal he discusses first, under digestive symptoms, second under physical signs, third under metabolic symptoms, and four under symptoms artificially produced. Under digestive symptoms, he submits the following: (*a*) Steatorrhea or fatty stools; (*b*) Azotorrhea, or faulty digestion of albuminous foods; (*c*) Sialorrhea; (*d*) Diarrhea; (*e*) Dyspeptic disturbances; (*f*) Emaciation, and (*g*) Nausea and Vomiting. Physical signs: (*a*) Presence of swelling or tumor; (*b*) Fever; (*c*) Pain and tenderness with muscular resistance; (*d*) Pressure on

adjacent organs; (*e*) Hemorrhage and (*f*) Jaundice. Metabolic symptoms: (*a*) Glycosuria; (*b*) Other urinary changes. Special symptoms: (*a*) Alimentary glycosuria; (*b*) Sahli's symptoms. Each one of these subdivisions is discussed with the author's usual clearness.

Of the whole group, perhaps the most interesting is centered upon the discussion of the urinary changes. The conclusions along these lines are as follows: Glycosuria is not common and cannot be relied on as a diagnostic symptom in disease of the pancreas, but when it exists along with other signs, it is extremely serious, and, in fact, as a rule, indicates an incurable condition. In turn indicanuria, maltosuria, pentosuria, and lipuria have been advanced as of diagnostic importance in pancreatic troubles. All these have been severally advanced and endorsed as useful signs of pancreatic disease, but it is significant that the small degree of importance which is attached to them is exemplified by Osler's discussion of the subject. He says: "The condition of the urine in diseases of the pancreas has no special peculiarities."

All investigators of pancreatic disease are eagerly hoping for a verification of Mayo Robson's prophesy, made before the American Surgical Association in Baltimore, during 1901, that he would shortly be able to suggest the means of establishing positive diagnosis of certain pancreatic disorders through urinary test. At that meeting he stated his belief to be that he was then able, by the examination of certain crystals, to distinguish between acute and chronic inflammations and between simple and malignant diseases of the gland. Since that date, the test has been applied to every case that has come under the author's care in which the pancreas was suspected, and also in a large number of control cases. The technic of the method of preparing these crystals, as discussed by Cammidge, will be considered later.

A statement from so very high an authority as Robson that a test has been found which enables the surgeon with a reasonable degree of surety to differentiate between a curative, benign condition of the pancreas which calls in the most imperative manner for operative intervention, and a malignant growth of the gland, for the treatment of which operation can avail but little and is therefore virtually contraindicated, is easily seen to be a matter of the profoundest importance. If, as is cited in his paper, cases have been presented to him which, with his generally admitted unequaled powers of diagnosis of pancreatic lesions, he has found himself unable positively to differentiate and has hence felt himself unable to treat except upon the findings of the urinary analysis, how welcome will this added diagnostic power be to those surgeons of lesser experience in this matter than Robson.

Second only in interest to the discussion of the urinary findings is the author's presentation of the causes of pancreatic hemorrhage. In all he dwells upon eight causes which in his opinion are either predisposing or exciting in their influence. Vascular disease of all kinds, headed by alcoholic or syphilitic degenerations, is naturally considered the paramount factor. Trauma may be a cause. The tissues of the pancreas are soft, and although the gland is well protected, it may be bruised by a violence which seems but slight. Fatty degeneration of the gland cells and fatty deposits in the pancreas, due to whatever cause, may lead to want of suitable support to the blood vessels which are thus rendered unable to withstand the normal blood pressure. This, in the author's opinion, accounts for the hemorrhagic pancreatitis so often seen in fat and flabby individuals. Fat necrosis in the gland or its vicinity has been suggested by Balser, who has found ground in support of his views. Disintegration of neoplasms, such as cancer or sarcoma may be the cause of extensive hemorrhage. Embolism of a pancreatic artery has been reported by Molliere, as the cause of the bleeding. It is well known that many general causes, which lead to hemorrhage elsewhere, may give rise to the lesion in the pancreas. Heart and lung disease, hepatic cirrhosis, hemorrhagic diathesis, the exanthemata and various forms of poisoning may all cause pancreatic hemorrhage. Pancreatitis itself may undoubtedly lead to a hemorrhage, but it would seem probable as a rule that the effusion of blood into the organ takes place rather as a result of some of the before mentioned causes and produces the pancreatitis rather than vice versa. Large pancreatic hemorrhages are probably more common than is usually supposed.

From this discussion of the purely clinical side of pancreatic disease, one can turn profitably to a presentation of the technic of the laboratory findings as given by P. J. Cammidge, whose paper follows Mr. Robson's. In 1900, he started upon the theory that there was some connection between fat necrosis and the hemorrhagic tendency so typically observed. He therefore examined the blood of several cases for glycerin

and glycerin derivatives. He found, however, that while this might theoretically be possible, its proof was practically impossible, because of the small amount of blood obtainable. He and Robson then turned their attention to the urine, and, recognizing the selective power of the kidneys by which they detect and excrete abnormal constituents of the blood, endeavored to show that the soluble products of fat necrosis or their derivatives, might be present in sufficient bulk to make them easily demonstrable.

Since these findings probably represent the most important advance which has been made in laboratory diagnosis recently, the more or less extensive technic should be widely known. It is as follows: The specimen of urine is filtered and 10 c.c. are poured into a small flask, one c.c. of HCl is added and the mixture boiled for ten minutes. A mixture of 5 c.c. of urine and 5 c.c. of water is then poured into the flask, which is cooled. Lead carbonate is now slowly added, to the extent of four grams, and after the completion of the reaction, the urine is filtered. To the clear filtrate are now added two grams of sodium acetate and .75 grams of phenylhydrazin hydrochlorate, and the mixture is boiled for four minutes. It is then poured into a test tube and allowed to cool. In from one to twenty-four hours a yellow deposit forms which with a one-sixth objective is seen to consist of sheaves and rosettes of gold and yellow crystals. Obviously, all sugar must be removed from the specimen before this method is utilized. The crystals met with in non-pancreatic cases turn brown and dissolve in dilute sulphuric acid in a somewhat different manner than in other conditions. The difference in the shape of the crystals and the increased time taken to dissolve them in sulphuric acid is the basis upon which the differential diagnosis is made.

The correct diagnosis of malignant disease requires care, but it can be made, Cammidge says, with a very considerable positiveness. The crystals are slow to dissolve, are large and broad, but it must not be forgotten that occasionally there is associated with the malignant disease a certain amount of inflammation which interferes slightly with the positiveness of the test.

VARIOLA.

IT has long been known that the staff of the Pathological Department of the Harvard Medical School, at the head of which is Prof. W. T. Councilman, has been interesting itself in variola. Now and again there have been reports and articles in the progress of the work, but these have been palpably of the nature of preliminary communications rather than of final statements, and have served to whet curiosity rather than satisfy it.

However, the time has finally come at which the fruits of these two years of labor and research have grown ripe for publication, and Drs. Councilman and Ernst have seen fit to present them in a noteworthy special number of the *Journal of Medical Research,* for February. The number comprises eleven articles and an epicrisis by Councilman. Of these articles, the most comprehensive is that which deals with the general pathological anatomy and histology of variola, the joint production of Councilman, Magrath, and Brinckerhoff, based on the study of fifty-four autopsies. The work has been done with the help of the most recent methods in histological technic, and constitutes a really important advance in many of the details which have long formed a fruitful subject of dispute. The development of the specific lesion, or pock, which presents a number of problems of considerable difficulty, has been traced with especial care.

It appears that the lesion is inaugurated by a degeneration of the cells of the lower layer of the epidermis, which is accompanied by an exudative inflammation. The products of the latter, at first predominantly serous, later more or less cellular, are contained within the spaces of a reticulum formed by the degenerated cells. With the increase of the exudate, the fibers of the reticulum eventually yield and rupture, and the typical, dell-shaped pock becomes a pustule. This process may take place wholly within the epidermis, or the corium may form the bottom of the pustule. Involution of the lesion is accomplished by absorption or evaporation of the fluid portion, exfoliation of the necrotic cellular débris, and regeneration of the epithelium. Such is the genesis and development of a lesion the nature of which has been a fruitful source of controversy ever since the early researches of Weigert. It is something characteristic and tangible in a disease which is otherwise most elusive and mysterious. Interest in the pock, however, is but a step toward the more intimate acquaintance with the etiological factors of the disease.

It has always been felt that the cutaneous lesion, presenting in its various phases a reflex of the clinical course, and apparently even determining the character of the latter, would eventually afford an explanation of much that has hith-

erto been inexplicable. The serious study of the pock from this standpoint is of rather recent date inasmuch as it had to wait upon an improvement in histological technic and the development of the bacteriological methods. It cannot be said, however, that the researches of the last twelve years have gone very far in clearing up the mystery. Bacteriological investigation has served to show quite definitely that none of the bacteria play anything except an accessory rôle, purely secondary in character, in the development of the pock and of the disease. In so far, their work has been of positive value.

Further than this, there is little but confusion and contradiction in the literature. In 1892 Guarnieri described a certain protozoan organism contained within the cells of the pock, and varying in size from that of a micrococcus to a nucleus. This work has been the point of departure of a large number of special researches with the aid of the most exact and delicate methods; unfortunately the results have not been commensurate. While a goodly number of observers have confirmed the findings of Guarnieri, there have not been wanting as many who have absolutely contradicted his results. In view of these conditions, skepticism has been the only attitude possible upon the etiology of smallpox. It has been the great service of Councilman and those associated in his work to put the discovery of Guarnieri upon a fairly firm foundation, and to have added to it many details of considerable value. They have found not only that the cells contain a microorganism which is peculiar, and which may be shown to be inoculable and transmissible, but they have succeeded in tracing and determining at least a part of its cycle of development. The latter part of the work has been assigned, very properly, to a specialist in protozoan zoology, Dr. G. N. Calkins, of Columbia College. Dr. Calkins accepts the name given by Guarnieri of *Cytorrhyctes variolæ*, and assigns the organism to the subclass *Neosporidia*, of the sporozoa; it belongs to a family (*Cytorrhyctidæ*) of which only two other representatives are known to exist, the parasite of the macronucleus of *Paramoecium*, and the brook trout parasite. The organism presents two phases of a life-cycle, a cytoplasmic, which is the earlier, and an intranuclear. The organism invades the epithelium as a minute homogeneous gemmule. This undergoes growth and differentiation, and by a schizogenetic process gives rise to a large number of other gemmules. After a further course of development, certain of these bodies find their way into the nucleus, where they undergo a differentiation which has been interpreted in the light of a sexual specialization. Thus it is believed that the sexual phenomena, including conjugation and subsequent division, are a characteristic of the intranuclear phase of the cycle. The gemmule, however, is the beginning and end of the entire process.

Such, in brief, are the chief elements in the parasitology of variola, and it is not easy to praise too highly the character of research to which they owe their elucidation. That a seal has been put upon the problem it would be presumptuous to believe. There still remain a host of questions to be answered, the unraveling of which will certainly be even more difficult and laborious than were the steps which led to the discovery of the parasite. The fate of the gemmule after it leaves the body, the transportation of the infecting agent by the body fluids, the method of cellular invasion—all these are questions of prime importance which urgently demand investigation.

Meanwhile, the assistants of Councilman have gone further to establish by means of experimental researches the constant and etiological association of the parasite and the lesion. It would be impossible to summarize all their work, for the details of which the original articles must be consulted. Suffice it to say that the combined researches, which really form integral parts of one larger idea, lead almost irresistibly to the conclusion that the real cause of the disease has finally been determined that it appears both in variola and vaccinia, and that the differences in character between these two manifestations are due entirely to modification in the life-cycle of the organism.

ECHOES AND NEWS.

NEW YORK.

Mount Sinai Hospital Appointments.—The first two positions on the House Staff were given to Ernest Sachs and Orville Schell who are to be graduated in June from the Johns Hopkins Medical School. The eighth place was given to Eben Alexander, Jr., of the Jefferson Medical College, Philadelphia. The intervening positions were assigned to members of the graduating class of the College of Physician and Surgeons, whose names were published in the last issue of the MEDICAL NEWS.

Hospital Interneships.—The following men from the College of Physicians and Surgeons secured hospital appointments during the past week: St. Mark's Hospital, E. J. Leavitt. German Hospital of New York, first, M. J. Myres; second, F. E. Neef; third, L. Fichter; fourth, T. J. Shreck; alternates, W. F. Bopp, H. E. Kudlich. Post-Graduate Hospital, L. P. Runyon, T. O. Vanamee, E. J. Smith. Newark

(N. J.) City Hospital, C. R. O'Crowley; alternate, J. Levy. St. Vincent's Hospital, M. S. Black, A. M. Bell, D. C. Fassett, D. J. Flynn, W. J. O'Leary, T. J. Cherry. Norwegian Hospital (Brooklyn), Charles Eastmond. Presbyterian Hospital, R. W. Cook, D. Cook, St. John Ward, H. H. Mason, Geo. Lathrop; alternates, B. W. Paddock, A. Vander Veer, Jr. St. Luke's Hospital, W. Ward, F. V. Hussey, A. R. Moffitt, D. G. Littell, S. M. Chessman, A. D. Mittendorff; alternates, G. Hale and I. O. Woodruff.

Gift for Eye and Ear Infirmary.—Mrs. John E. Parsons, of 30 East Thirty-sixth Street, daughter of the late Benjamin H. Field, ex-President of the New York Eye and Ear Infirmary, has sent $1,000 to Treasurer John L. Riker of the Board of Directors of the infirmary to go toward a fund to be used for the perpetual endowment of the institution.

Gift to German Hospital.—The will of Maximilian Schaefer, who died about two weeks ago, has been admitted to probate in this State, and provides for the distribution of $12,000 among various charities. Of this amount $7,500 is bequeathed to the German Hospital at Lexington Avenue and Seventy-eighth Street. Mr. Schaefer in the will directs that of the bequest to this hospital $5,000 be used to endow a bed for the free treatment of employees of the F. & M. Schaefer Brewing Company and such other patients as may be designated from time to time by the executors and trustees.

Plans for Convalescent Hospital.—New York's first convalescent hospital is to be established at New Dorp, Staten Island, by St. John's Guild. This will inaugurate a system of hospitals for this city similar to those of London, which have accommodations for more than 13,000 convalescents. That New York has never had more than 200 beds in all its hospitals for this class of patients has long been deplored by physicians, who are in a position to know the vital need of special care for recovering invalids. Twenty-five thousand dollars will be expended at once to equip the summer Seaside Hospital at New Dorp for winter use, and plans for a $350,000 addition are being considered by the guild. Dr. William Maynard has recently returned from a long sojourn in London, studying the convalescent hospital system there for the St. John's Guild. His plans for the installation of the first convalescent hospital in the city were formally approved at the meeting of the trustees of the guild on Tuesday night. Three hundred and twenty patients will be accommodated by the first expenditure. Many hundreds more are to be provided for later.

Sensible Comment.—A doctor in an Illinois town was recently quoted as contributing to a discussion as to whether the newspapers should publish the name of the attending physician in an accident case, the statement that to have this done "would spur him on to greater efforts to secure the complete recovery of his patient." That is truly a curious remark, however one looks at it, and curious, too, is the way the New York *Medical Journal* looks at it. "We always hesitate," it says, "to comment on newspaper quotations of the alleged statements of physicians," which is a nice, pleasant way of beginning, rather characteristic of the medical press, and then it continues as follows: "If any member of our profession made the foregoing remark he should instantly matriculate into some profession or business where the lack of journalistic comment, which is so stimulating to him, would not necessarily imperil the lives of others. The remarks exhibit a mental attitude that we cannot harmonize with our concept of any physician, however unfit." Of course that's all right in substance, but its implication that good doctors either are or ought to be indifferent to "journalistic comment" is just about as absurd as was the Illinois doctor's implication that he would work harder for a patient with whom the newspapers had connected his name than for one whom he could cure—or not cure—without attracting any particular attention. That doctors can make improper use of publicity is known to none better than the men on newspapers, one of whose constant duties it is to see that the doctors who want to do just that thing do not succeed too often in doing it. There are, however, proper as well as improper uses of publicity, even for a doctor, and even in medical matters there not a few lay papers that compare with the medical press about as the ordinary physician compares with the specialist. The trouble with the doctors is that they are always regretting the days when they were a sort of priesthood and their art was a "mystery" understood only by themselves—and by themselves none too well. There's no mystery about it now, and the pretense that a layman necessarily is incompetent to criticize the language or the acts of the doctors is the wildest nonsense.

The otherwise sensible comment of the *Times* is spoiled by this silly ending.

New York University Building Decision.—By a recent decision of the Court of Appeals the final step has been taken toward the settlement of the controversy between the N. Y. University and its former Medical Faculty, the members of which resigned in 1898 and founded the Cornell University Medical College. The Court of Appeals confirms the decision of the lower courts ordering the return of the building and property to the former owners. The University Medical College like all others of its time was originally and for many years a proprietary institution holding its charter through the N. Y. University, but wholly independent of it in management. In the effort to improve standards of teaching it became evident that this proprietary quality should be eliminated, and the Faculty accomplished this by the aid of a gift of money from Col. Payne by which the ownership of the Faculty was cancelled and the property was placed in the hands of a corporation fund for this purpose, the Faculty agreeing to accept fixed salaries in lieu of a division of the profits. After a few years, with the intention of establishing a closer connection with the N. Y. University, it was agreed that the corporation which held the property and managed the affairs of the College, composed largely of members of the Faculty, should transfer their property and function to the N. Y. University, and that the latter should manage the College through a "Medical Committee" of the Council composed of three members who should be satisfactory to the Faculty. On nomination of the Faculty two new members were elected to the Council, and, with Col. Payne, the donor of the money, constituted this committee. Within a few months disagreements arose over a proposed consolidation with Bellevue Hospital Medical College; the recommendations of the Medical Committee were overridden by the Council, and the Faculty held that the agreement had been broken. Reestablishment of the original status was refused by the Council of the University, and a year later the Faculty seceded and established the Cornell University Medical College, and the Corporation which had transferred the property sued for its return. The N. Y. University then took over the Bellevue Hospital Medical College as its medical school with most of the Faculty and made it its medical department. The property is valued at $150,-

000. The results of this final decision are that the large buildings formerly occupied by the New York University adjoining the Loomis Laboratory are now the undisputed property of the Corporation, many of whom are members of the Faculty of the Cornell University Medical College.

PHILADELPHIA.

Frankford Hospital.—Dr. H. E. McCaffrey has assumed the duties of resident physician in the Frankford Hospital, succeeding Dr. J. W. Kenney, who recently resigned. Dr. McCaffrey comes from Bristol, R. I., where he was for some time in charge of a sanitarium.

Changes in Bureau of Health.—Drs. J. S. McClintock and Mary E. Pennington began on April 1 their duties as bacteriologists in the Bureau of Health, succeeding other employees whose resignation had been asked. Chief Milk Inspector Byrnes, associated with the Health Department for more than twenty-five years, has been superseded by former Assistant Inspector Clegg.

Many Trips for Ship's Surgeon.—When the Red Star Line steamship Switzerland docked here during the past week, her surgeon, Dr. Edmund Y. Burrows, completed his two hundred and fiftieth round trip between this port and Europe. This record is claimed to be unequaled. Dr. Burrows has spent nearly all his life on the seas, having been a seaman aboard various ships before his appointment to the Switzerland.

Medical Inspection of Schools Instituted.—The daily medical inspection of children in the public schools of Philadelphia began on April 5. With the possible exception of a few schools in outlying sections, every school will be visited daily. Director Martin states that the first object of the inspectors will be to exclude children suffering from contagious diseases; secondly, to exclude all those who have non-contagious diseases, but who are too ill to remain in school. Afterward there will be made a careful examination in order to discover physical defects, including spinal curvature, flatfoot, deafness, defective eyesight, narrow chest, etc. Diagnoses will be communicated to teachers by a code in order that the child may not know the nature of the disease. In all cases the parents are to decide regarding any medical care to be instituted.

Millions for Improvement of Hospitals.—Commissions for new buildings and improvements on various hospitals in the city, now in the hands of builders, amount to several millions of dollars. Among the institutions thus extending are the Jefferson, St. Agnes, Episcopal, Will's Eye, Presbyterian, Home for Incurables, Rush, University, St. Timothy's, Methodist, Howard, Mt. Sinai, and the Phipps Institute. At the Home for Incurables at Forty-eighth Street and Woodland Avenue the first of two cancer wards is to be built.

Course in Tropical Medicine.—A course of ten lectures on Tropical Medicine has been instituted by the Medical Department of the University of Pennsylvania. The present year's course is being delivered by Major Guy L. Edie, U. S. A. They began on March 23 and will continue on each Wednesday and Friday until completed. They are given in the Laboratory of Hygiene, from 5.30 to 6.30 P.M. Members of the profession are cordially invited to attend.

Director Martin to Establish Fresh Air Retreat.—Dr. Edward Martin, Director of Public Health and Charities, has purchased an old mansion and twenty acres of land near his summer home in Delaware County and will transform it into a fresh air retreat for sick and needy children who seldom see trees or grass. In order to get them out doors as much as possible, tents will be supplied in addition to the house itself. The home will be supplied with occupants from those children coming under the personal notice of Dr. Martin and also to some extent by various societies. The place will be ready for occupancy about May 1. It is entirely a private undertaking, one that Dr. Martin has had in mind for several years.

Massage of the Heart as an Aid to Resuscitation.—At the meeting of the Philadelphia County Medical Society held March 23, Dr. W. W. Keen reported two cases of massage of the heart as an aid in resuscitating patients under the influence of anesthetics. One was a personal case of laryngectomy in a patient who took the anesthetic very badly, both at that time and during a previous operation. Other methods of restoration having failed, the abdomen was opened and the heart massaged through the diaphragm without opening that structure. This manipulation was unsuccessful in reviving the patient. The second case was one of hysterectomy, reported through the courtesy of a Swedish physician. In that instance the chest wall was resected and the pericardium laid bare. Recovery occurred. Dr. Keen also reviewed 25 additional cases from the literature. He believes the measure to be justified in certain instances after the apparent failure of other less radical means; other methods, even when massage is employed, must not be neglected. In answer to a question, Dr. Keen said that the determination of time under such circumstances was always a very difficult matter, but broadly speaking, he would not resort to massage under five minutes after pulsation ceased, and would not use it after ten had elapsed.

Vaccination Law Needed.—Dr. Benjamin Lee, Secretary of the State Board of Health, looks upon the power to enforce vaccination during the outbreaks of smallpox as among the most valuable of the legislative means of controlling the disease and would welcome such power in Philadelphia. West of the Alleghanies the epidemic appears to be under control and this is attributed by Dr. Lee largely to the power of compelling vaccination vested in the health boards of cities of the second and third classes. In Pittsburg and Allegheny this procedure has diminished the number of cases fifty per cent. during the past three months. In the Eastern parts of the state there is great difficulty in convincing the physicians of some counties that smallpox actually exists; some pronounce the disease to be an entirely new one, never before described. The State Board of Health is now furnishing vaccine virus free to small villages and rural districts and bearing at least part of the expense of vaccination.

Marked Increase in Typhoid.—For the week ending April 2 there were reported 321 new cases of typhoid fever, the largest number for many years. Deaths for the same period numbered 24. Since January 1 there have been 2,056 cases of the disease. Thorough investigation of the milk supply of the city has eliminated that source of infection and the water supply is held responsible.

War on Baby Farms.—Coroner Dugan is at present conducting an investigation into several infanticide cases and numerous arrests have been made. An important case is now under trial. Revolting details regarding the doings of malpractitioners and

the keepers of "farms" have come to light. Among these were the burning in furnaces of live infants. Evidence of a combination of these "doctors," extending into cities other than Philadelphia, is said to have come to light. As one result of the commendable investigation now being made, the proprietors of at least a dozen suspected places have closed their establishments and left the city. More disclosures are yet to be made.

Phipps Institute.—It is announced that Dr. M. P. Ravenel, of the Medical staff, will shortly sail for Genoa, Italy, to spend the greater part of the summer with Professor Edoardo Maragliano in the study of the question of specific therapy of tuberculosis and a possible vaccination against that disease. The Phipps Institute has already accomplished much in the cure and prevention of tuberculosis and valuable results may confidently be expected from this latest enterprise of the institution. The ability of Dr. Ravenel as a conservative scientific investigator is recognized by the profession throughout the world.

Dr. McLeod Able to Walk.—Dr. George I. McLeod, of Ardmore, who had both feet amputated, as the result of being crushed by a train last December, is now, by the aid of artificial feet, able to walk with but a slight limp. This happy outcome of a most severe injury is a source of great delight to the many friends of Dr. McLeod. He is soon to resume the practice of his profession.

CHICAGO.

Personnel of Examining Board.—The County Civil Service Commission has announced the members of the examining board for the promotive examination for the work of senior physicians at the Dunning institutions as follows: Nervous and Mental Diseases—Drs. Sydney Kuh, Hugh T. Patrick, and Daniel R. Brower. Medicine and Surgery—Drs. Frank Billings, John B. Murphy and L. E. Schmidt. Tuberculosis—Drs. Wm. A. Evans, Geo. W. Webster, and A. C. Klebs. The examination will take place at the Dunning institutions April 14, 15 and 16.

Dunning Staff.—The County Board has confirmed President Foreman's appointments to the consulting staff of the Dunning institution. Following are the appointments: Dr. Frank Billings, consulting physician (internal medicine); Dr. John B. Murphy, consulting surgeon; Dr. Wm. A. Evans, consulting pathologist; Dr. Hugh T. Patrick, consulting physician (insanity); Dr. Arnold C. Klebs, consulting physician (tuberculosis).

Caution Against Hydrophobia.—This subject is discussed at considerable length in the weekly bulletin of the Health Department, and among other things the report says: "The number of rabid dogs which have been killed during the last few weeks, brings from the department of health the advice that the public should appreciate the importance of securing a dog that has bitten anyone and keeping him alive until it is positively known whether or not he is suffering from rabies." It also recapitulates the symptoms of rabies in dogs as follows: "Beware of a dog when it becomes dull and hides away; appears restless; always on the move and prowling; whose countenance is somber and sullen; walks with head down like a bear. Beware of one that barks at nothing, when all around is still. Beware of a dog that scrapes incessantly and tears up things. Look out for the dog who has become too fond of you and is continually trying to lick your hands and face. Beware, above all, of the dog which has difficulty in swallowing, which appears to have a bone in its throat, and one that has wandered from home and returns covered with dirt, exhausted and miserable."

Meeting of Bellevue Alumni.—On April 11 the Fourth Annual Meeting and Dinner of the Western Alumni Association of the University and Bellevue Hospital Medical College will be held at the Sherman House. The guests on this occasion will be Drs. Joseph D. Bryant and Egbert Le Fevre, of New York. The officers of the Association are Dr. David W. Graham, President; and Dr. Willis O. Nance, Secretary.

Drainage Canal.—The value, as a health protection, of the drainage canal, incomplete though it is, was strikingly manifested during the week, according to the Health Department. The waters of the streams about Chicago, formerly tributary to the river and thence to the lake, were higher even than in the record year 1892, in which year there were 1,489 deaths from typhoid fever, and Chicago's death rate was the highest of any city in the world. In that year the vilely polluted contents of the main river and its branches were poured incontinently into the lake without control. A volume of from 600,000 to 700,000 cubic feet per minute has been poured steadily through the drainage channel away from the lake down the Desplaines Valley. If 1904 escapes the typhoid tragedy of 1892, it will be due solely to the agency of the incomplete main drainage channel.

Intelligent Care of Infants in Summer.—Dr. A. Belcham Keyes recently gave a talk on this subject before the School of Domestic Arts and Science, Chicago, and after giving some sensible advice and timely hints to mothers, he spoke of the work of the Milk Commission, saying that under the auspices of the Children's Hospital Society of Chicago, its work is to inspect farms; to advise with the farmer as to the improved methods of hygiene for the cow, cleanliness in milking and shipping the milk to the whole city of Chicago; also to distribute good, pure milk, fresh, or Pasteurized, or modified, to the poor mother at a reduced price; also to instruct the mother, at mothers' meetings, in hygiene and feeding. This good work was done last summer to the extent of distributing among the poor 222,000 bottles, representing nearly 51,000 quarts of milk, besides a large quantity of barley water. The benefit of this work was not to the poor alone, but to every householder in Chicago. Its inception was in the visit of a leading Austrian specialist in deformities, who called attention to the long-felt needs of children for proper care in sickness, as well as for a preventive or prophylactic care of their hygiene and diet in infancy. Dr. Keyes reviewed what good feeding in infancy prevents: Firstly, it lessens the number of cases and mortality from acute intestinal and infectious diseases. Secondly, it avoids the distressing conditions known as English disease, or rickets, from which a large number of children die yearly, and, if they survive the disease, are often deformed for life. Thirdly, a large number of the cases of tuberculosis, especially of the bone in young children, are predisposed to the disease by the catarrhal conditions of the intestines, in which condition they take into the circulation the bacillus of tuberculosis, which the imperfect inner lining of the blood vessels of the long bone make a good resting place, with its resultant chronic invalidism and later frequent implication of the lungs and death. Fourthly, proper infant feeding—even if these first

three are escaped—is a necessity for the good health and, perhaps, even the formation of the character of the child that later will become the man, and this is the preservation of the health and character of the American-born man.

CANADA.

No Adulteration in Canadian Liquors.—Under date, Ottawa, March 31, the Department of Inland Revenue have issued a bulletin on distilled liquor. The samples analyzed consisted of: Rye whisky, 91; white, 30; Scotch, 24; Irish, 2; gin, 27; rum, 12; brandy, 30; total, 216. Mr. McGill, who made the analysis, states: "No deleterious substances have been found in any of these samples. In accordance with special instructions, I have made examination for alkaloids in all whisky samples, having less than 75 per cent. proof strength. A negative result was obtained in every case. The principal adulterant is water. In order to enable me to say, whether or not a sample may be styled adulterated from dilution with water, it is necessary to recognize some standard strength for alcohol. The British Sale of Food Amendment Act for 1879, fixed the minimum limit strength for gin at 65 per cent. and that for brandy, rum and whisky at 75 per cent. proof spirit. Although these limits are not legally recognized in Canada, I have used them (in the absence of any other standard) for purposes of comparison. The spirits most tampered with are whisky (rye and malt) and gin, while gin shows a noteworthy falling off in strength." In conclusion Mr. McGill says: "I may add that the furfurol test and the production of a distinct turbidity (opalescence) on the addition of water to the distillate are the chief means we possess for discriminating between a liquor which has been produced by direct distillation from the 'mash' and one which has been manufactured by reducing rectified spirit with water to the desired strength and further addition of flavoring or coloring matter. Scotch and Irish whiskies and gin, rum and brandy are liquors of the first type (sometimes spoken of as pot-still spirits). Rye whisky and white whisky (malt whisky) are usually manufactured from rectified spirit."

The Donations to McGill University.—Sir William McDonald's recent very handsome gift to the Student's Union is a further reminder of the extent to which McGill is indebted to Montreal citizens. The list of benefactions to McGill University is a long one. In addition to the large gifts of such men as the Hon. James McGill, Sir William McDonald, Peter Redpath, Esq., Lord Strathcona, the Molsons, etc., there have been a large number of substantial donations, which have not excited quite as much comment in the public press, but which have nevertheless been of much service to the University and the cause for which it stands. The total donations in lands, buildings, apparatus, together with the Hon. James McGill's original endowment and donation in land reaches the value of $2,300,172.72. Miscellaneous endowments reach the sum of $2,074,504.78, while special chairs have privately been endowed to the value of $962,393.32. A sum amounting to $60,790.80 has been contributed to a fund for establishing scholarships, granting medals, etc. The total amount in donations of lands, endowments, etc., reaches in sum total the very handsome figure of $5,597,861.62.

The Medical Branch of the Canadian Militia.—The Medical Branch of the Militia Department has now on order a large supply of material and equipment that will add materially to the efficiency of this service, and when certain reforms now in contemplation are carried into effect, will make it one of the best branches of our citizen army. The purchases include 18 ambulance wagons of a new type designed by Lieutenant-colonel Fiset, Director-General of the Canadian Army Medical Service. Each wagon will be a hospital in itself, with room in it for four patients lying down, or 13 sitting. There will be beside nine water carts, that is, one for each bearer company; 12 sets of medical panniers, 12 sets of surgical panniers, 18 sets of santeen panniers, 50 surgical haversacks, and 50 monkey boxes. Part of this material is being manufactured in Ottawa, while the balance is being brought from the old country.

Ontario Doctors May Be Prosecuted for Failure to Make Returns.—Dr. Hodgetts, Secretary of the Ontario Board of Health states that in future the medical men must report all cases of infectious or contagious diseases. He has looked up the records and finds that in 1902 there were returned to the Department 1,542 cases of typhoid fever, while the hospital statistics show 2,067 cases, with 242 deaths. In 1903 a return from the 700 divisions showed 1,012 cases, while in the hospitals there were 1,918, with 298 deaths. The purpose of the Medical Act, he says, is being destroyed and the healthy condition of the province very much endangered. During the past few months several outbreaks of typhoid fever have been covered up by medical men failing to report. Prosecution may be resorted to in order to wake doctors up and protect the public.

Canadian Medical Men for Europe.—Dr. J. Alex. Hutchison and Dr. George E. Armstrong, of Montreal, along with Dr. Murray McLaren, of St. John, N. B., and Dr. W. G. Anglin, of Kingston, Ont., the latter of whom has just recovered after a prolonged attack of blood poisoning, will sail on April 9 from Boston, for Italy. They will visit the principal hospitals of that country, finally making their way to Vienna. They will visit the home and hospital of Dr. Lorenz.

Legal Action Re Adulteration of Foods.—The Medical Health Officer of Montreal, Dr. Laberge, has taken two important actions in the Recorder's Court against an American and a Canadian firm that were selling canned tomatoes in Montreal that were colored with aniline. The importance of the actions was that they were being taken under the Federal Act, which gave the city power to prosecute for fraud, while under the Provincial Act, they can only prosecute on the plea that such coloring is dangerous to health. It will be the first time that the city has taken procedure under the Federal Act, and where fraud will be charged.

New Brunswick Provincial Hospital for Cure of Nervous Diseases.—The New Brunswick legislature has before it a bill to change the name of the Provincial Lunatic Asylum to the New Brunswick Provincial Hospital for the Cure of Nervous Diseases. The bill authorizes the commissioners to employ two disinterested and competent medical men, who with the superintendent, shall examine all patients and see who ought to be in the asylum and who should be sent elsewhere. There is an impression abroad in New Brunswick that the institution has been used for the purpose of getting clear of undesirable people, who should be cared for by their friends or sent to the almshouse. It is also proposed that even where a certificate of insanity has been granted by two physicians, the superintendent need not admit the patient if he has a doubt, but may consult with an outside physician in regard to the case.

GENERAL.

Officers American Association of Pathologists and Bacteriologists for the Ensuing Year.—President, Dr. Simon Flexner; Vice-President, Dr. James Ewing; Secretary, Dr. H. C. Ernst; Treasurer, Herbert N. Williams; New Member of the council for vacancy occurring in 1905, Dr. W. T. Howard; Mem-

ber of the Executive Committee for the Congress, Dr. H. C. Ernst.

Japanese Biologists.—The *Times* speaks with approval of the splendid work done by various Japanese scientists during the past decade as follows:

"It is probably not generally known that during recent years Japanese contributions to science have been numerous and important. The most conspicuous successes of its original investigators appear to have been in the field of biological research, a study demanding great patience, manual dexterity, and a refinement of technic which are quite characteristic of the people who are now occupying so large a share of the world's notice. In their contributions to our knowledge of pathogenic microorganisms the Japanese are pushing German and French experimenters for the first place, and are far ahead of those of Great Britain or the United States. Several years ago Kitasato segregated and described the specific germ of tetanus and was admittedly the first to do so. This discovery was followed by the preparation of a tetanus antitoxin which has been extremely useful. Another Japanese, Shiga, has discovered the bacillus which is chiefly responsible for dysentery, so fatal to the soldier in war time, and use of this knowledge is being made to safeguard the Japanese troops in Manchuria and Korea with excellent effect. The absence of ameba in many cases of dysentery critically examined was the cause of much confusion in the clinical study of this disease until Shiga established the fact that in such cases the disease is due to the presence of a microscopic plant now known as the *Bacillus dysenteriæ*. Still other contributions of great value to biological knowledge have come from Japan, and the fact is of especial interest as showing in what directions the peculiar civilization of that country has developed since its association with the Western world was resumed."

A Useful Call Down.—We quote from a recent number of the *Critic and Guide*, wherein attention is called to certain statements made by the manufacturers of a new iron albuminate compound. The editor comments as follows: "1. The manufacturers state that (——) is neutral in reaction. I would ask my readers to test it with litmus paper or with phenolphthalein. I find it distinctly acid, and I think I am able to test for a reaction. 2. The percentage of iron in (——) is rather a mooted point, which I should like to get some light on. The manufacturers say: 'Each tablespoonful of (——) is equivalent to one grain of elementary iron.' Well and good. But Dr. Coblentz says: 'I find eight per cent. of iron (calculated as metallic iron) present in the state of organic combination.' This of course leads one to believe that the preparation contains eight per cent. of metallic iron, which would be equivalent to at least 19.2 grains per tablespoonful. There is a great difference between 19.2 and 1. But let us assume that Dr. Coblentz really meant to say that the preparation contained eight per cent. of the organic combination. The formula given by the manufacturers is $C_{47}N_{17}SH_5Fe_3O_{22}$. The percentage of elementary iron contained in this 'definite' chemical must therefore be $^{168}/_{1658}$ or 27.3 + %. Eight per cent. of this is 2.184, which would give us at least 5.2416 grains of elementary or metallic iron to the tablespoonful. The manufacturers themselves claim that their preparation contains only one grain of elementary iron to the tablespoonful. How to explain this discrepancy? Dr. Coblentz is a careful analyst. Is it possible that the manufacturers themselves do not know the true percentage composition of their preparation? This is not very likely. So how to explain the discrepancy? I shall await the explanation with impatience. 3. The manufacturers state that (——) is absolutely unchanged by hydrochloric acid. This statement, I regret to say, is contrary to the facts, and I am at a loss to understand how intelligent manufacturers could make such a statement. That it is very decidedly changed by hydrochloric acid will be seen from the following simple experiment: On adding potassium ferrocyanide to (——) no change is noticed. But if we add hydrochloric acid to (——) and then add potassium ferrocyanide, we get a very decided reaction; namely, we get the well-known color and precipitate of Prussian blue, which proves conclusively that hydrochloric acid does decompose (——), changing it into inorganic iron. The further statement: 'hence it is free from local action on the gastric mucous membrane,' is therefore also untrue. 4. The manufacturers state that their preparation has attracted much attention in scientific circles in Europe. I may be pardoned if I doubt the correctness of this statement. If it had attracted attention, the attention was not sufficiently strong to bring it into the medical press. Disregarding false modesty, I will state that I am probably as familiar with foreign medical literature as any one man can be. I go through every medical journal of any importance in six different languages. My memory is also pretty good—and still I cannot recollect having seen any article in the foreign literature on (——). Of course, there is a possibility of an oversight. If this is the case, will the manufacturers kindly send me the foreign bibliography on (——)? 5. One word about the American literature on (——). I shall not say that it has all been made to order, but I would ask our readers to compare Professor (——) article with the advertising matter sent out by the manufacturers. If ever there appeared a 'write-up,' this is one—or I have lost my ability to recognize and diagnose 'write-ups' when I see them. Even the phraseology is strikingly alike in some places. Is it merely a coincidence? The manufacturers of (——) will greatly oblige the medical profession by shedding some light on the obscure points which I have touched upon in this editorial." More critical comment of this kind would bring to light a number of high priced "Professors" whose write-ups have no justification.

Suggestive Vital Statistics.—The annual report of the Board of Health of Connecticut, its immediate returns covering the year 1903 and its larger tabulations ending with the year 1902, contains some very significant figures of mortality, showing the mutations of disease and the causes. One of the most striking tables shows the steady and rapid decrease of consumption in the State. The table covers a period of twenty years, during which, notwithstanding an increase of population from 622,700 to 908,420 by the nearest censuses, the annual deaths from consumption fell from 1,505 to 1,356. Based on the Board's estimate of population, the death rate per 10,000 of population fell during the two decades from 23.2 to 14.9, or a reduction of 38.8 per cent. A fact brought out is that during the first of the two decades the deaths of females from consumption was much in excess of males, while, in the last decade, over 700 more males than females died from the disease. The change is probably accounted for in part by the shifting of occupations, and in part by the fact that young women of the Irish race, who were peculiarly susceptible to consumption in New England, have become inured to the climate. As the Board of Health reports are much more complete than they were twenty years ago, the reduced mortality from consumption is, in fact, considerably greater than the comparative returns indicate. In its report for 1899 the Board showed that mortality from consumption was considerably greater in both Massachusetts and Rhode Island than in Connecticut, though decreasing rapidly in all three States. The Board approves the treatment of incipient cases of con-

sumption by the open air and "tent" plan. For this purpose a sanatorium with 250 acres is to be opened in the town of Wallingford, for which an unknown donor has given $40,000, to which gifts of $3,000 and $5,000 have been added, and another large gift is expected. As distinguished from consumption, pneumonia shows a rapid increase, and now leads all diseases in mortality. In 1903 there were 1,428 deaths from pneumonia, as compared with 1,317 from consumption. For five years before 1890, and just before the first appearance of "La Grippe," the average number of deaths from pneumonia was only 970. Heart disease shows a similar, though less marked, tendency to increase. The decrease of typhoid fever as the result of systematic efforts to locate and stamp out the source of the disease shows very impressively in the returns. In thirty-eight years the deaths per 100,000 of population fall from 109 to 22, notwithstanding fuller returns in the later years. Partly as the result of intelligent treatment of smallpox, there was in 1903 only one death in 287 cases, the disease, however, being of a very mild type. The board criticises severely the common tendency to treat measles and whooping cough as "trivial" diseases in the face of returns for 1903, which show 450 deaths from them, as compared with 439 from scarlet fever, diphtheria and croup combined. The birth returns continue to indicate the slow but steady extinction of the purely native race, births from American parents falling in ten years from 8,487 to 8,283, while births from foreign and mixed parentage rise during the same time from 11,467 to 12,576. In a considerable number of the smaller farm towns the births from foreign or mixed parentage exceed the native births, suggesting the extent to which foreigners are taking up the farms in the back country towns. In one town, for example, almost purely a farm town, the births from native parentage in 1902 were 8 as compared with 16 of foreign or mixed parentage.—*Evening Post.*

Bubonic Plague Progressing.—A dispatch from Bombay dated March 29 states that the latest available bubonic plague returns for the whole of India for the week ended March 19, show a mortality of 40,527, an increase of 7,000 over those of the preceding week. In the Punjab and the northwest provinces each there is a death rate of 10,000 weekly; in the Bombay Presidency the deaths number 8,500, and in Bengal 5,000.

$500,000 Donated to Johns Hopkins Hospital to Offset Loss by Baltimore Fire.—John D. Rockefeller has given this amount to the Johns Hopkins Hospital. The gift is to prevent the curtailment of the usefulness of the hospital by the losses caused by the big fire. The money is given outright and will be turned over to the trustees of the hospital in whatever form they may elect.

OBITUARY.

Prof. A. B. ARNOLD, the author of several surgical treatises and a distinguished classical scholar and translator of old Hebrew and Arabic writings, died at San Francisco last week, aged eighty-five years. He was born in Germany in 1819.

Dr. WASHINGTON H. BAKER died at his home, 1610 Summer Street, Philadelphia, April 1, aged fifty-two years. He was a graduate of Lehigh and the University of Pennsylvania. He served as resident to the German Hospital, was visiting physician at St. Joseph's Hospital, and a surgeon in the Second Regiment, N. G. P.

Dr. GEORGE H. HAMMOND died at his home in Freeport, L. I., March 29, of pneumonia and pleurisy, aged fifty-eight years. He was the son of the Rev. Mowbray S. Hammond and for some years was a staff surgeon in the Nassau Hospital at Mineola. He was a prominent member of the Masonic and several other fraternal orders.

Dr. STEPHEN P. TRUAX, a well-known Brooklyn physician, while engaged in performing an operation on a woman in the Bushwick Central Hospital, in Brooklyn, last Thursday morning, was taken ill suddenly and died in a few minutes. Dr. Truax lived at 257A Madison Street, and was forty-eight years old. He was born in Owego. In 1891 he was graduated from the Long Island College Hospital. He was the visiting gynecologist of the Bushwick Central and a lecturer on obstetrics and gynecology in the Post-Graduate Hospital in this borough. He had been a sufferer from heart disease and had lately been afflicted with the grip. Dr. Truax belonged to the Kings County Medical Society and several Masonic organizations.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

LONDON, March 19.

THE LATE DUKE OF CAMBRIDGE AND THE DOCTORS—THE ENDOWMENT OF MEDICAL EDUCATION.

THE Duke of Cambridge, a near relative of King Edward VII., has just passed away at the age of eighty-five years. He was for forty years Commander-in-Chief of the British Army, and had at any rate one quality which proverbially belongs to the British soldier: he stuck to his post and seemed determined to die there with his drawn salary in his hand. But circumstances were too much for him and he had to resign a few years ago, much against his will. It could not be said of him that he never set a squadron in the field, for he was in charge of a division in the Crimea where he showed himself so little master of his trade that had not Colin Campbell, afterward Lord Clive, been at his elbow, the force under his command would have been destroyed. But it is his attitude toward the army surgeons that chiefly concerns the medical profession. He was the most obstinate opponent of all reforms proposed for the medical department of the army, and lost no opportunity of showing his dislike of the officers of that department. In this he was zealously seconded by Field Marshal Lord Wolseley, whose own almost bloodless campaigns had been successful largely owing to the perfection of the medical arrangements. Wolseley had a brother in the medical service and it has been suggested that this was the reason of his hostility towards the doctors whom he called and, as far as he could, treated as "camp followers." The Duke's dislike of doctors has in like manner been attributed to a rankling sense of resentment on account of the obligations under which he had been laid by one or two of their body. At the battle of Inkerman, as may be read in Kinglake's *Invasion of the Crimea*, 700 men of the Guards had to face some 7,000 Russians. The Duke lost his head and went away "for reinforcements" with the result that the troops were thrown into confusion. The situation was saved by Dr. Wolseley who brought out a portion of the force right through a heavy Russian column. According to Sir William Howard Russell, the correspondent of the *Times*, the Duke was a second time rescued from a position of extreme danger by the splendid courage of another medical officer, Dr. Wilson. Wilson, who was Surgeon to the 7th Hussars, was attached to the Brigade of Guards as a volunteer. For his exploit he received the thanks of the Duke at the head of the Brigade after the battle. Wilson is also mentioned by Kinglake as having done excellent service

by rallying the men of the Guards at one spot where no other officer was present. In spite of his acknowledgment made of Wilson's services and of a special mention of him in a private dispatch to Headquarters dated November 6, 1854, the Duke's real feeling would seem, from his subsequent conduct in regard to the medical department, to have been such as could scarcely be described as gratitude. Wilson himself, it is sad to relate, received no more solid reward than thanks and died a few years later in a madhouse, the close of his life having been darkened by disappointment.

Sir Donald Currie, one of our shipping magnates who got a title some years ago as a reward for taking Gladstone on luxurious sea trips, has given $500,000 to University College, London, for the erection of buildings in which to house a school of advanced medical studies on a site which has already been purchased. A sum of $100,000 is to be devoted to the establishment of a nurses' home in proximity to University College Hospital, and to provide accommodation for medical students attending poor women who take advantage of the benefits of the Maternity Department. The gift has been formally accepted by Lord Roseberry as Chancellor of the University of London and Lord Reay as President of University College. They express the opinion that the donation will help in directing the course of the University and College along the line of development by which London may be made the seat of a University worthy of the Metropolis and of the Empire. University College used to have the most brilliant staff of any of the London medical schools. The names of Sharpey, Burdon-Sanderson, Michael Foster, Wilson Fox, William Jenner, Russell Reynolds, Bastian, Gowers, Erichsen, Henry Thompson, John Marshall, Christopher Heath, Graily Hewitt and Tilbury Fox used to attract students from every part of the world. Within a very few years this galaxy of talent was scattered, and in spite of the accession of younger men like Thomas Barlow, Victor Horsley, Godlee, Sidney Martin, University College has never recovered its old position. With a new hospital which it owes to the liberality of the late Sir J. Blundell Maple and the new school for which Sir Donald Currie has now supplied the necessary funds, it may enter on a phase of more vigorous life. University College Hospital has a place of its own in the medical history of London because it led the way in throwing its appointments open to competition in the spirit of its motto *Palmam qui meruit ferat.* Before its day London hospital appointments were kept closely in the family, and even the resident posts were strictly reserved for the private pupils of the surgeons, who found the payment of a fee, varying from $2,500 to $5,000, a profitable investment. This, with many other abuses which made the London hospitals until near the middle of the last century hot beds of monopoly and privilege, has since been swept away so completely that it is difficult to realize that such a state of things ever existed.

OSTEOPATHY IN NEW YORK.

To the Editor of the MEDICAL NEWS:

SIR: A bill has been introduced in the Legislature of the State of New York, by Senator Fitzgerald, entitled, "An Act to Define and Regulate the Practice of Osteotherapy." It is Senate Bill No. 983, Introductory No. 761, and has been referred to the Committee on Judiciary, of which Hon. Edgar T. Brackett is Chairman.

This bill defines "osteotherapy" as follows: "The practice of osteotherapy is defined to be a system, method or science of healing disease without the use of drugs or medicine of any kind. It is based upon the proven laws of anatomy and physiology, and comprises scientific and thorough knowledge of the structure and functions of the human mechanism, to apply certain organic laws and natural remedial resources, within the human organism itself, and by means of scientific manipulations and adjustment, assist nature, in harmonious accord with its own mechanical principles, activities and processes, to recover from displacements, derangements, obstructions and pressures, and to regain normal equilibrium of form, action and function, thus restoring to the patient normal health and strength. The word 'osteotherapy' is derived from the Greek ('osteon,' bone, and 'therapeia,' nature, healing). The word 'osteotherapy' is a correction of the word 'osteopathy,' which latter means, translated from the Greek ('osteon,' bone, and 'pathy,' suffering), bone suffering. The word 'osteotherapy' embraces the science so-called osteopathy, the practice of massage and Swedish movements to its fullest extent, and any one practising the latter sciences, under those or different names, shall come under the jurisdiction of this act."

It is difficult to imagine this as a serious effort to secure legislative enactment, for to read the definition is "to laugh"; but we must assume that the gentleman who introduced the bill was not actuated by the desire to amuse his colleagues. The measure goes on to provide for a board of examiners, appointed by the Regents of the University of the State of New York, for examination and registration fees, and so on. If physicians will write to the members of the Senate Judiciary Committee opposing this bill, its fate will not be long in doubt.

If you will publish this letter, together with the inclosed reason why "osteopathy" and allied "pathies" should not receive special recognition, it will bring the matter before the profession, and, I believe, aid those who are endeavoring to protect our professional standards. One of the arguments used at the public hearings before our legislature is that other States have enacted laws recognizing the practises of "osteopathy," "optometry" and other peculiar methods of treating disease. I cannot believe that New York will ever enact similar laws unless some better reason than this is advanced. I do not believe that New York will enact any laws affecting the practice of the healing art unless the medical profession will endorse them. This opinion is the result of about eight years of more or less intimate acquaintance with our legislators, and, if it is correct, then, to use the language of the day, it is up to the medical profession to be alive to its responsibilities.

Very truly yours,

FRANK VAN FLEET, M.D.,
Chairman, Committee on Legislation, of the Medical Society of the State of New York.

"CLEAR" (?) VISION OF THE CAUSE OF MIGRAINE.

To the Editor of the MEDICAL NEWS:

DEAR SIR: Presumably on the principle "Strike while the iron is hot," Dr. G. M. Gould follows up the recent issue of his "Biographic Clinics" by an article on the "History and Etiology of Migraine," *Jour. Am. Med. Ass'n,* Jan. 16 and 23, 1904.

His studied effort to attract attention invites scrutiny. All truth is welcome: but truth may be so presented as to conceal truth. Treatment of symptoms or coincident conditions may be so advocated and adopted as to delay the discovery of the real cause of those symptoms or conditions. Fearing this, I draw the attention of your readers to it.

I will premise by saying that I believe in correcting errors of refraction and getting all the good possible out of it. In this I approve of this writer's practice, even when it cures migraine, as I have no doubt it often does. But I cannot accept his conclusions which I here quote:

"The appalling mystery of thousands of years, especially of the last 300, the explanation of the one disease whose cause nature and cure are unknown, is now clear to all who wish to know, and whose minds are capable of receiving the truth. Migraine . . . . is but one of the manifestations and results of eye strain."

"It (migraine) may be cured by lenses correcting the astigmatism on which the disease depends."

Of "Biographic Clinics," unique and interesting in their human element as they undoubtedly are, it should be stated that their effort to make a post-mortem diagnosis has not the justification of the usual object of an autopsy, since it is not for the purpose of finding out the pathological condition of the bodies concerned, but to show that the subjects suffered from astigmatism. This is done by the aid of the anamnesis *without* physical examination. In a word, the writer has given us, not a *demonstration* but an *inference*. Inferences are captivating but dangerous. The vice of the inference is twofold: First, if not severely logical, it gives undue emphasis to an error; second, it readily becomes the ground of the familiar fallacy known as "begging the question." That is, in the present instance, the astigmatism would be assumed on the strength of the inference and employed with the force of a proposition. This writer, who, above all others, I would suppose to be on guard against this fallacy, falls into it immediately in this very article (p. 241) in these words: "At present all over the United States, there are quiet, almost unknown, *oculists, who are curing thousands of patients of the afflictions described in the fourteen historic instances* of the two volumes called Biographic Clinics." My italics show the application of the fallacy as well as if the writer had finished the sentence by adding to it the words "by lenses correcting their astigmatism." I am not disputing the alleged facts as to *cures* (which, however, I suspect may be only *inferences*), but merely pointing out the fallacy in the logic. This writer was at one time President of the American Academy of Medicine. If he could err so easily, how much more easily and unthinkingly could the majority of his readers.

As to the validity of his inference, that these "clinics" had astigmatism, observe: First, that he does not *prove* it, for that requires the demonstration on the living subject; second, that he does not argue to a legitimate conclusion, for that would require the logical use of facts that at present are against him.

For example, first, his own article furnishes the fact that migraine is due to other causes—instancing organic diseases; second, migraines, without organic diseases, have been cured without the aid of glasses correcting existing astigmatism and yet with complete relief of the symptoms which the writer connotes under the term eye strain; third, there are cases of migraine without astigmatism, but with the symptoms of eye strain that have been cured without glasses (some of these very cases may be studied in the files of the MEDICAL NEWS); fourth, the seton has cured migraine; fifth, nasal operations are continually being reported to our State and National Societies that have cured migraine; and the list is still incomplete. But, any one of these facts invalidates his *inference*, so unduly and harmfully emphasized.

I would not be surprised to find in a school-girl's essay on migraine the use of such words as "appalling mystery," or the incorrect statement that it is the "*one* disease whose cause and nature and cure are unknown." And it would not surprise me that she regarded migraine as a *disease*, for she might even be familiar with the fact that Head had made some interesting pathological findings in the Gasserian ganglion in cases of migraine; but she might not know that even these had not been declared to be the seat of the disease of which the migraine was an expression. But I *would* be surprised if I found her loading her predicate with two such significant phrases as he employs in his conclusion: "The explanation is now clear to all (1) who wish to know, and (2) whose minds are capable of receiving the truth." Being of those whose minds are incapable of receiving this truth (?), I have taken the pains to place an interrogation mark after the word "clear" in the writer's predicate. The spirit manifested in these phrases is the same as seen in another quotation which I shall here make from this same article: "Their (the patients') official medical advisers derisively smile that old-time, tired, sneery, sickly smile." If, in spite of appearances, this writer is overpoweringly in love with *the truth*, I fear he is *not* overpoweringly in love with the other members of his own profession. The monograph on this subject by a distinguished specialist, which he admits is "erudite and cultured," he yet treats with the scant courtesy of the following words: "This bizarre theory, the latest result of critical science, does not need a word to demonstrate its absurdity."

One needs to know the causes, and I am aware how "eager has always been the search for etiology"; but I see here as did Jonathan Wright, from whose history I have just quoted, the need of wisdom and restraint in the search.

The writer withholds his name until the author of "Biographic Clinics" amends his mental attitude to his fellows in the practice of ophthalmology, and for the present signs

E PLURIBUS UNUM.

SOCIETY PROCEEDINGS.

THE AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS

Met in New York City, April 1 and 2, 1904.

The President, Eugene Hodenpyl, M.D., in the Chair.

Eck's Fistula.—The first paper was read by Dr. J. Edwin Sweet, of Philadelphia, on the technic of the operation known as Eck's Fistula. Dr. Sweet said that he had tried various methods in developing a more improved method of forming a direct communication between the portal vein and the inferior vena cava, but that his experiments on dogs had led him to prefer sutures of black silk in uniting the approximated walls of the vessels, and a specially arranged cautery for making the incisions in the vessel walls, which openings should not be less than two inches in length, to prevent subsequent portal congestion.

Coagulation of the Blood and Thrombosis.—This paper was read by Dr. Leo Loeb, of Philadelphia, who said (1) it is possible to obtain thrombi composed mainly of agglutinated blood-plates in animals whose blood has been made incoagulable by injection of leech extract. It is, therefore, probable that agglutination of cellular elements and not formation of fibrin is the primary factor in thrombosis; (2) an active influence of the endothelium of blood vessels inhibiting the coagulation of the blood cannot be said to exist. (3) The serum of the dog has an inhibiting influence on the effect of tissue coagulins

which themselves accelerate the coagulation of peptonplasma. This inhibiting effect is probably a specific one. (4) Organs undergoing processes inside the body which are similar to autolysis, have still an accelerating effect upon the coagulation of the blood (coagulative processes in infarcts). (5) Anchylostoma contains, mainly or entirely in its anterior part, a substance strongly inhibiting the coagulation of the blood. The existence of this substance is probably one of the causes of the anemia of anchylostomiasis. (6) The material covering the intestinal mucosa has a strongly inhibiting effect upon the coagulation of the blood, being thus able to restrict hemorrhages. The pancreas possesses the least coagulative power of all organs examined and is therefore relatively favorable to the occurrence of hemorrhages.

Amaurotic Family Idiocy.—Dr. William G. Spiller, of Philadelphia, reported the results of his microscopical examination of the material from a case clinically typical of amaurotic family idiocy. Only about eleven cases of this disease, with careful pathological reports, are to be found, and in few of these has the method of Marchi been employed. Hirsch's and Sach's cases are the only ones in which the extraordinary changes of the nerve cells, first described by Hirsch, have been observed. Dr. Spiller found all the nerve cells of the central nervous system intensely diseased. These cells were swollen, rounded, almost free of dendritic processes, and also of chromophilic elements, except about the nucleus. In many cells the nucleus was displaced to the periphery of the cell and the chromophilic elements remaining about the nucleus were granular. He also found intense degeneration by the method of Marchi. The pyramidal tracts seemed to have been longer degenerated in the spinal cord than in the brain, and it appeared as though the degeneration had begun at the portions of those tracts that were more remote from the cells of origin. The degeneration of the pyramidal tracts was of longer duration than that of the rest of the white matter. The lemniscus, the anterior cerebellar peduncles, the intrapontile part of the fifth nerve, the white matter of the frontal and occipital lobes and the paracentral lobule, the corpus callosum, a piece of the internal plantar nerve, etc., showed intense degeneration by the method of Marchi. Amaurotic family idiocy, he said, is a disease in which intense and widespread degeneration of nerve cells and nerve fibers occurs, and probably is the result of imperfect development of the nervous system, so that degeneration of this system begins within the first year of life. Dr. Spiller referred to two other cases reported by him previously with Dr. McCarthy, cases which clinically were not typical, and yet in these alterations of the nerve cells were like that occurring in this disease were found. No similar cases are known in literature. He suggested that, possibly, these might be regarded as aberrant forms of amaurotic family idiocy.

Hemolysis in Human Urine.—Dr. Roger Sylvester Morris, of Ann Arbor, Mich., read a paper on this subject. He said that in examining urines of patients with various diseases for the presence of hemolysins, negative results had been obtained except in cases of pernicious anemia, in which he had found that a very slight hemolytic action seemed to be present at times. This, he said, might be interpreted as supporting the theory advocated by Hunter and Warthin, that pernicious anemia is essentially the result of increased hemolysis.

Specific and Non-specific Agglutinins.—This was the subject of Dr. William Hallock Park, of New York, who said that a single variety of bacteria injected into a suitable animal (rabbit, goat, horse), excites the production of a number of agglutinins. One or more of these have an affinity for the bacteria injected or practically identical varieties, and for no others. These agglutinins appear to be truly specific, and can be absorbed only by the bacteria which excited them. Along with the specific agglutinins, others develop in the blood of the injected animals, which act upon other varieties than those with which the animal was immunized. These other varieties may differ greatly in their biochemical and pathogenic characteristics. If an animal is chosen whose serum does not as yet contain these common agglutinins, it will be found that there is at first a development of abundant specific agglutinins and a slight or moderate amount of common agglutinins. If the injections are continued, the common agglutinins may equal in amount the specific agglutinins. Thus the serum of a horse treated for a number of months with the Manila dysentery culture of Flexner clumped that bacillus in dilutions of 1 to 10,000, and also a variety of the colon group in the same dilutions. The serum of a goat treated with the colon bacillus clumped during the first weeks of treatment the colon bacillus only, and then later the Flexner bacillus in dilutions of 1 to 3,000. The colon bacillus at that time was clumped in dilutions of 1 to 5,000. As a general rule, the agglutinins produced in an animal through the injection of any bacillus can be exhausted from the serum by saturating it with sufficient quantities of that bacillus. Not only the specific, but the common agglutinins will thus be absorbed. All other varieties of bacteria will simply absorb the common agglutinins, the serum thus treated clumping now only the variety of bacteria injected. The lack of knowledge concerning the varying amounts of specific and common agglutinins in the serum of animals at different times during a long period of injections has led to many conflicting statements. Thus the various dysentery varieties were long considered to have identical affinities for agglutinins because the serum of horses rich in common agglutinins was used. Similar conflicting statements as to whether or not certain colon varieties had with typhoid bacilli common agglutinins are accounted for in the same way. The same gradual development of common immune bodies has been noted by us for rather closely allied bacteria, such as the dysentery bacilli and certain colon types. The serum of the injected animals protected at first only from the variety injected, but later from other varieties.

Degeneration of the Spinal Cord Produced by Repeated Injections of Cultures of Bacillus coli communis of Low Virulence.—This was the subject of a paper by Dr. G. A. Charlton, of Montreal, and was read by Dr. J. George Adami, who said that at a previous meeting of the association, Dr. Charlton had called attention to the grave anemia which can be produced in rabbits by repeated injections of both cultures of a colon bacillus (*B. coli communis*) of low virulence obtained from the intestinal canal of the healthy rabbit. An anemia characterized by poikilocytosis, and by a diminution of the red cells of 1,500,000, and of the hemoglobin to 10 per cent, which was recovered from when the injections were stopped and appeared again when they were renewed. In those animals in which the anemia was developed to a considerable extent, there appeared

a spastic condition of the hind extremities, followed by wasting of the muscles and eventual complete paralysis of an ascending type. Histological studies of the tissues of such animals showed (1) advanced atrophy of the affected muscles; (2) slight evidences of degeneration in the peripheral nerves; (3) some pigmentation and other indications of degeneration in the anterior horn cells and to a less extent in the posterior horn cells; (4) extensive degeneration, with sacculated appearance of the posterior and lateral tracts. The appearances in the cords closely resembled those seen in certain cases of pernicious anemia. These investigations, Dr. Charlton thinks, would tend to confirm the view that pernicious anemia and sundry ascending degenerations of the cord are of a low infectious origin.

On the Nature of Blood-plates.—Dr. Joseph H. Pratt, of Boston, in introducing this subject, said that the opinion so widely held by pathologists that blood-plates are degenerative products of erythrocytes is untenable. The structures formed from the erythrocytes by the action of hypertonic solutions of various salts bear only a superficial morphological resemblance to the true blood-plate, which is a definite element of the circulating blood. For the study and preservation of the blood, Dr. Pratt employs a solution containing 1.5 per cent. sodium metaphosphate and 0.65 per cent. sodium chloride. Perfect cleanliness of slides and coverslips is also essential or the plates may vanish almost instantly. The blood-plates never contain hemoglobin. They are always colorless and present a granular appearance and are flat. Films of blood stained with the eosinate of methylene blue show coarse granules in the plates which take the basic dye. The degeneration products of the erythrocytes, described by Arnold and W. Lasson, usually contain hemoglobin, later they become colorless. They are refractive and vary in size, are usually spherical in shape and never flat. By allowing a drop of 5 per cent. acetic acid to mix with sodium metaphosphate and blood Arnold's bodies are formed and can be compared with the blood-plates in the same preparation.

Experiments upon Agglutinins.—Dr. B. H. Buxton gave his conclusions after experiments upon agglutinins by Dr. V. C. Vaughan and himself. He considered three points in connection with work done on typhoid bacilli. Cultures of typhoid bacilli, he said, might be good or bad agglutinators, that on passing a good agglutinator through guinea-pigs it rapidly lost its agglutinability up to a certain point, that a serum which would agglutinate a good agglutinator at 1-20,000 might not agglutinate the same after passage through four guinea-pigs above 1-400. After passage through more guinea-pigs, however, up to ten or eleven, he had found that the agglutinability was not further decreased. He had found also that the serum of a rabbit immunized with a bad agglutinator had agglutinated a good agglutinator well and the culture of immunization badly. A good agglutinator, he said, would always agglutinate well and a bad agglutinator badly, no matter what the origin of the serum. He said that heat applied at 70° C. for thirty minutes slightly weakened the agglutinins, 75° C. applied for the same time changed them to agglutinoids, and at 80° C. they were destroyed. Heat applied to cultures at 70° C. and up to 100° C. modified the agglutinable substance (agglutinum) so that it combined with the agglutinum but produced no agglutination (agglutinumoids). The agglutinumoids absorb about as much agglutinin as normal agglutinum. Fresh emulsions of agar cultures in salt solution, when heated, produced similar results, except that the agglutinumoids absorbed much more agglutinin than the normal agglutinum. Agglutinums in emulsions in 1 per cent. formalin were not modified by heat up to 80° C., but they were destroyed at 100° C. and agglutinumoids were not formed. Dr. Buxton further said that simultaneous inoculations of different kinds of bacteria produced, in rabbits, specific agglutinins for each kind. A rabbit, he said, immunized simultaneously to typhoid and paratyphoid and cholera and pyocyaneus, on treating the serum with typhoid bacilli and filtering, the filtrate would not agglutinate typhoid but would agglutinate the other three as readily as the control serum. This was true, also, of any two or three, so that he had been able to absorb all but one in a similar experiment.

On the Coagulation Time of the Blood of Nephrectomized Rabbits.—Dr. S. J. Meltzer, of New York, said that in a series of experiments carried out by Dr. W. Salant and himself on nephrectomized rabbits, it was found that the clotting of the blood was considerably delayed in these animals. Forty to fifty hours after nephrectomy the coagulation time was nearly five times as long as that of normal animals. These results suggested, he said, an investigation of the clotting time of human blood in various forms of nephritis.

Dr. Pearce confirmed Dr. Meltzer's findings and said that these results were particularly true in hemolitic serum.

Experimental Study of Decapsulation of the Kidney.—Dr. I. Levien, of New York, reported on this subject. He said that surgeons had accidentally cured nephritis by decapsulation of the kidney, and that this had led them to recommend it in cases of acute inflammation of the kidney with colic. The function of the capsule had, heretofore, been unknown, and he had studied the kidneys of dogs in an endeavor to throw some light on this subject. The history of the capsule suggests, he said, that it performs other functions than those common to the capsules of other organs. A kidney having its capsule detached swells, hence it is influenced mechanically by the intact capsule. By means of an instrument, which Dr. Levien had devised, he had studied the pressure exerted by the capsule and had at the same time studied by means of sphygmographic tracings the pulsations of the capsulated and the decapsulated kidney, comparing them with the carotid pulsations. Pulsation ceased in the decapsulated kidney. His experiments were unfinished, but he believed that the capsule has great influence upon the kidney and suggested the probability of the wisdom of nephrotomy in preference to decapsulation in certain cases of nephritis.

Neuroglia, Myoglia and Fibroglia Fibrils.—Dr. F. B. Mallory, of Boston, demonstrated with the microscope, neuroglia, myoglia, and fibroglia fibrils.

Stain Applicable to Differential Leucocyte Counts.—Dr. Onuf, as a guest, gave a preliminary note on a stain applicable to differential leucocyte counts in the counting chamber. The procedure, he said, is the same as that in counting red cells. The blood is drawn up to the mark 0.5 in a red blood counting pipette, but instead of diluting with Gowers' or Toisson's solutions (up to the mark 101) a staining fluid of the following composition is used for dilution: (1) 12 per cent. formalin (Schering, 12 volumes; water enough to make 100 volumes), (2) 1 per cent. aqueous solution of sodium chloride (c. p.), (3) one-half per cent. aqueous solution of eosine (yellowish),

(4) Unna's polychrome methylene blue. Equal volumes of these four solutions are mixed, preferably in the succession above given and then filtered. The filtrate is the fluid taking the place of Gower's or Toisson's solutions in the pipette. It produces within fifteen to thirty minutes at ordinary room temperature, quicker at body temperature, a different stain of the leucocytes, bringing out the protoplasm, nuclei and granulations. Dr. Onuf said that further experiments, especially with regard to eventual application of the method to lesser dilutions of blood such as 1-100 or 1-20 are still pending.

Lesions of the Nodular Form of Xanthoma.—Dr. G. McConnell presented for Dr. Joseph McFarland, of Philadelphia, a series of lantern demonstrations of a histological study of the lesions of the nodular form of xanthoma.

(To be Continued.)

THE AMERICAN SOCIETY OF CLINICAL SURGERY.

Second Stated Meeting, held March 18, 1904.

The President, George Emerson Brewer, M.D., in the Chair.

FIRST DAY—MARCH 18.

After the business meeting, which was held at the Medical Department of Columbia University, the officers and members proceeded to the demonstration room of Professor Huntington.

Tumors of Salivary Glands.—Dr. F. C. Wood gave a demonstration and discussed the general pathology of the mixed tumors which are so frequently found in the salivary glands. After a short résumé of the studies which have led pathologists to consider these tumors as endothelial in nature, the speaker called attention to the fact that many of these growths contained flat epithelium and well defined glandular structures. It is therefore necessary to assume that at least some of the tumors contain epithelium and it seems probable that a large proportion of the growths are composed chiefly of epithelial tissues derived from the embryonic epithelial structures which go to make up the salivary glands and not of endothelium. The complex nature of the tumors was, in the opinion of the speaker, best explained by the assumption of an error of development by which cartilage and other mesoblastic structures were left in close proximity to the glandular tissue at an early period of embryonic life and the derivation of the cartilage was most probably from that of the branchial arches. Attention was also directed to the congenital defects which were not uncommon in these regions, and in some cases were directly connected with the mixed tumors. A certain similarity between the structures described and those found in the teratoid growths from the kidney, ovary, and testicle, was also brought out. The speaker then mentioned some of the clinical characteristics of the growths, drawing attention to the fact that many of the tumors were benign and recurred only when incompletely removed. Even after a recurrence a fairly good prognosis could be offered after wide excision of the secondary growth. Specimens were also shown of true carcinomata, sarcomata, and adenomata of the parotid, to illustrate the differences in morphology between these growths and the mixed tumors, while the clinical differential diagnosis between the various growths was briefly touched upon.

Dr. Churchill Carmalt gave a demonstration of the accessory salivary glands. He showed a large amount of material, demonstrating the comparative anatomy of these organs and discussed their morphological relations and significance.

Modified Murphy Button.—Dr. Joseph A. Blake then inserted his modified Murphy button between the stomach and duodenum of a dog. This button consists of two small ordinary buttons linked together with very light bars. Its advantages over the round button lie in the large size of the opening which it cuts, and second in the fact that its shape should enable it to be more easily passed than the ordinary form. It somewhat resembles a modification suggested by Murphy, but differs from it in that it is lighter in construction and particularly in the size of the immediate opening which it creates, the passage in Blake's button being much the larger of the two.

Wounds of Arteries.—Dr. George E. Brewer then demonstrated his new method for treating wounds of the larger arteries. This consists in the isolation of the wounded vessel, in the removal of all particles of its sheath, in the rendering of it absolutely dry with ether and alcohol and in winding upon it a cylinder of an elastic adhesive plaster specially made for this purpose. The demonstration was on a carotid artery and proved eminently satisfactory.

Mr. Donald Gordon, Jr., the student assistant of the Surgical Laboratory, demonstrated an ingenious device which he has made to facilitate the application of the gum elastic to the vessel.

McGraw Elastic Ligature.—Dr. J. W. Draper Maury demonstrated a modified method of performing gastro-enterostomy with the McGraw elastic ligature. He showed a series of specimens which had been prepared in the last year at the Surgical Laboratory, representing an attempt to demonstrate that the ligature could be so placed as to punch out tissue after the manner of the Murphy button.

After this demonstration, the Society repaired to the University Club where luncheon was served.

Gastroptosis.—In the afternoon, a clinic was held by Dr. Ellsworth Eliot, Jr., at the Presbyterian Hospital. Dr. Eliot showed two cases; women who had entered the hospital, each suffering from symptoms which pointed clearly to gastroptosis. In each he had adopted a new technic which he will publish in full in the near future.

He then showed an Italian whose tongue had been resected by a modification of Kocher's technic. Dr. Eliot thought that this method would prove very serviceable in certain forms of carcinoma of the floor of the mouth and distinctly stated that its use was limited. He then showed two cases of resection of malignant growths in the bowel. One had occurred at a rather unusual position, viz., in the ileum. The other was situated in the colon. In each of these cases the method of anastomosis was by end-to-end ligation, a special technic, the details of which will soon be published, having been employed. He showed radiographs of an open safety pin in the bronchus, which proved that spontaneous version of the pin had been effected. Dr. Eliot then operated upon a case of appendicitis in order to demonstrate the technic employed at the Presbyterian Hospital.

The Society was then escorted to Roosevelt Hospital.

Facial Paralysis.—Dr. Robert F. Weir showed three cases of facial paralysis which had been treated by grafting a section of the hypoglossal into the facial nerve. The result of this technic has been very gratifying, and the promise for the operation is most encouraging. Dr. Weir then spoke most interestingly of a number of cases he had had years ago and gave the details of the removal of a large number of foreign bodies from the bronchi.

Enterostomy.—Dr. Blake then performed enterostomy with his new button in a case which had presented alarming symptoms of gastric ulcer.

Many of the members of the Society and several guests were then entertained at an informal dinner at the University Club.

SECOND DAY—MARCH 19.

Hernia.—At 8.30 A.M. the Society convened at the Hospital for the Ruptured and Crippled, where Dr. W. B. Coley gave a hernia clinic. He showed a number of cases in children and others upon whom he had operated a varying number of years previously, and then demonstrated with an unusual show of speed the technic employed in the treatment of hernia at this hospital.

The Society was then escorted to the Hudson Street Hospital, where Dr. P. R. Bolton showed a type of an "Emergency Hospital." He then took the members to the New York Hospital, where he gave an operative clinic and demonstrated a large number of cases upon whom laparotomy had been done through the transverse incision.

At one o'clock luncheon was served at the Arena, and after this Dr. Howard Lilienthal escorted the Society to the new Mt. Sinai Hospital at Fifth Avenue and One-hundredth Street.

The next meeting will take place in October, one day to be spent at Buffalo, at the invitation of Dr. Roswell Park, and one day in Cleveland, by invitation of Dr. G. W. Crile.

BOOK REVIEWS.

THE PRACTICAL CARE OF THE BABY. By T. W. KILMER, M.D., Associate Professor of Diseases of Children in the New York School of Clinical Medicine, etc. With 68 Illustrations. F. A. Davis Company, Philadelphia.

THIS is one of the most practical of the books on this subject it has been our pleasure to see. All the details involved in the care of infants are described with an attention to minutiæ which might seem meticulous to one who has not encountered the blunders which even intelligent people sometimes make when beginning the bringing up of children. The illustrations, for the most part photographs, are numerous and useful. Especially instructive is one series showing the proper method of clothing infants at different ages and seasons of the year. Feeding is discussed in accordance with modern teaching and the home modification of milk is elaborated with complete working directions. The ordinary complaints of babies are described and appropriate household remedies mentioned as well as the indications which require the presence of a physician.

We recommend it warmly as a guide to young mothers and to nurses.

MODERN SURGERY. General and Operative. By JOHN CHALMERS DA COSTA, M.D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia; Surgeon to the Philadelphia Hospital and to St. Joseph's Hospital, Philadelphia. Fourth Edition, Rewritten and Enlarged, with 707 Illustrations, some of them in Colors. W. B. Saunders & Company, Philadelphia, New York and London.

IT is not altogether without regret that we see this book in its new form. Now that through rewriting and additions it has been brought into the class of the "big books" it has lost the great virtues of compactness and convenient size which it formerly possessed and which made it a wonder for the amount of information it contained in a small space. Still this disadvantage is more than compensated for by the new matter and new illustrations which have been added so that in its new dress of most artistic type it forms one of the most complete, practically useful and beautiful works on surgery at our command.

The progress of surgery is one of the notable events of the new century and it is interesting to see how closely abreast of the times the present volume is. The new vista which the studies of Ehrlich and others have opened up by their studies in immunity, hemolysis, etc., have received due recognition as well as the lessons military surgeons have learned in the treatment of gunshot wounds during the recent wars. The iodine sterilization of catgut devised by Claudius seems to have been overlooked in rewriting the section on suture material, though several others of the newer modern features are the descriptions of the baking apparatus for use in the treatment of joint affections and the new intestinal suture of Connell. Cystoscopy and prostatic surgery also receive up-to-date discussion.

It is a beautiful book and contains a higher percentage of actually useful, available information than many other medical works with which we are acquainted.

THE LYMPHATICS. General Anatomy of the Lymphatics by G. DELAMERE; Special Study of the Lymphatics in Different Part of the Body by P. POIRIER and B. CUNÉO. Authorized English Edition. Translated and Edited by CECIL H. LEAF. With 177 Illustrations and Diagrams. W. T. Keener & Co., Chicago.

THE anatomy and physiology of the lymphatics are being taken more and more into account in the surgery and medicine of to-day and any work such as the present which gives promise of more exact knowledge in these matters is to be welcomed gratefully. This volume which forms a section of "The Treatise of Human Anatomy," edited by P. Poirier and A. Charpy is divided into two parts. The first is concerned with the general anatomy and more particularly the histology of the lymphatic system while the second on the special lymphatics of the different sections of the body gives the regional distribution of the vessels and glands.

A large portion of the first part is given up to a very able discussion of our present knowledge of the leucocytes together with a most exhaustive bibliography of this subject. The minute anatomy of the lymphatics is treated with much clearness and the value of the letter press is greatly enhanced by numerous very good drawings, many of them colored.

The second half of the book has perhaps a more directly practical bearing and comprises researches of the greatest interest and value. Now that malignant disease of the internal viscera can be detected at a much earlier period and much more daring operative procedures can be attempted, the study of the lymphatic relationship of the organs becomes of the utmost importance in dictating the manner of operating and in indicating the chances of metastasis beyond the surgeon's reach.

The mechanical execution is excellent and the translation leaves nothing to be desired, so that it is a pleasure to commend the volume to all those interested.

BLOOD PRESSURE IN SURGERY. An Experimental and Clinical Research. The Cartwright Prize Essay for 1903. By GEORGE W. CRILE, A.M., M.D., Professor of Clinical Surgery, Western Reserve Medical College, etc. J. B. Lippincott Company, Philadelphia and London.

THE importance of this communication can hardly be overestimated. The therapeutic discord prevailing in our views as to the management of surgical shock and allied conditions is sufficiently shown by the almost diametrically opposed plans of treatment often advocated

by eminent men, sometimes even in the same hospital. The true significance of changes in blood pressure and the means at our command to combat abnormalities of this function have not received sufficient attention from a clinical standpoint at the hands of the experimental physiologists. The author has made this strangely neglected yet all important topic the subject of a most brilliantly conducted research and the startling nature of his conclusions, which appear almost heretical at first blush, proves how far from the truth our empirical observations have led us.

The book is divided into two general sections, the first devoted to the protocols of experimental work on 243 animals and the second to a more or less clinical study of the results obtained. The conclusions reached are so radical in nature that it is hardly fair to attempt to present them deprived of the experimental evidence which justifies them, but it may be said that in shock the essential phenomenon is a diminution of the blood pressure and that this is the result of exhaustion of the vasomotor centers. Strychnine, alcohol, nitroglycerin, amyl nitrite, are all either useless or even injurious, while saline infusion has a limited range of usefulness. Adrenalin in minute amounts administered continuously with saline solution (intravenously) gives excellent results with animals but its practicality has not yet been established. The most efficent means of restoring the enfeebled blood pressure to normal bounds is mechanically by encasing the entire body in a double suit of rubber between the walls of which air can be pumped and any desired pressure be produced and evenly distributed over the entire surface of the body. The method has found quite considerable clinical application with most satisfactory results.

The book is one that can safely be recommended to the thoughtful consideration of every one interested in major surgery, and, indeed, it is almost the duty of every worker in this field to acquaint himself with its contents, for it is only by extensive corroborative observations that a uniform system of treatment for this omnipotent enemy of surgical endeavor can be formulated.

A MANUAL OF OPERATIVE SURGERY. By Sir FREDERICK TREVES, Bart., K.C.V.O., C.B., LL.D., F.R.C.S., Sergeant Surgeon-in-Ordinary to H. M. the King, etc. New Edition. Revised by the Author and Jonathan Hutchinson, Jr., F.R.C.S., Surgeon to the London Hospital. With upwards of 470 Illustrations. In two volumes. Vol. 2. Lea Brothers & Co., Philadelphia and New York.

WHAT was said in regard to the beauty and excellence of the first volume of this magnificent work on its appearance a few months ago applies with still greater force to the present book. Such richness in paper and binding, such wide margins, such artistic typography and clean presswork have seldom been used in the embellishment of a medical work, while the reputation of the distinguished author is security for the fact that the jewel is worthy of its setting.

This volume is concerned principally with regional surgery and covers the wide field with a clearness of description and a directness in the choice of technical methods which shows the hand of the master at every turn. The one weak point lies in the sections on gynecology which, as is to be expected, are not quite up to the pitch of what our specialists have taught us to look for. With this exception the volume is most satisfactory and is pregnant with the forceful utterances of an authority.

The work is divided into the following sections: Plastic Surgery, Operations on the Neck, Operations on the Abdomen, Operations on Hernia, Operations upon the Scrotum and Penis, Operations upon the Rectum, Operations on the Head and Spine, Operations on the Thorax and Breast. Under these headings all of the important topics belonging to each are discussed in a most instructive and attractive manner. The chapter on excision of the tongue is particularly interesting; the author's preference is for a modified Whitehead operation preceded by a preliminary ligation of one or both lingual arteries with removal of the glands on the affected side. No application or dressing is applied to the stump of the tongue. Of the use of the cold loop or galvanic écraseur in these cases he says, "As a surgical undertaking *excision by the écraseur* has about it a distinct air of senility."

In the chapters on intestinal surgery full descriptions of the various applications of the Murphy button are given but, like most modern operators, the author prefers to dispense with it where possible. Under renal surgery we find no mention of the question of decortication for nephritis and the author differs from American surgeons in advising against passing the sutures through the separated capsule in nephropexy. The discussion on prostatic operations is not quite as modern as might be desired, as no mention is made of Bottini's operation with its numerous modifications. A suggestion that has much to commend it is the one that after breast operations the dressing be applied so as to keep the arm away from the side and allow motion at the elbow.

In every way the work fulfils any demands that may be made upon it; it is sufficiently lucid and simple in style to be agreeable to the student, and yet sufficiently technical to be of the utmost value as a book of reference to the occasional operator or to the specialist, who will find the many references to the literature most useful. Added to this is the sumptuous execution which, for a bibliophile, makes it a pleasure simply to handle the volumes.

THE MAN WHO PLEASES AND THE WOMAN WHO CHARMS. By JOHN A. CONE. Hinds and Noble, New York.

THIS interesting little book, contains a number of very practical hints with regard to that most important of qualities—how to be agreeable. Tact is said to be the basis of many a professional man's success. Unfortunately it is said to be one of the things that is inborn and cannot be acquired. There is no doubt, however, that where something of the quality exists already it may be improved by proper direction, and that even a very good imitation of the real article is not impossible for those who cultivate the realization of the significance of social usages. Mr. Cone's book may very well serve as a manual for those who feel the need of a guide, not in the ways of polite society, but of living in such a manner as to make life as pleasant as possible for those around them.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications.. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

MEDICAL UNION No. 6. W. H. King. 12mo, 58 pages. Monograph Press Co., New York.

INTERNATIONAL MEDICAL ANNUAL, 1904. 8vo, 770 pages. Illustrated. E. B. Treat & Co., New York.

THE LIFE OF WM. PEPPER. By F. N. Thorpe. 8vo, 555 pages. Illustrated. J. B. Lippincott Co., Philadelphia and London.